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FORMERLY

AMERICAN GAS LIGHT JOURNAL

VOL. CVI., NO. 19
WHOLE No. 3087

NEW YORK, SATURDAY, MAY 5, 1917

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AMERICAN
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Vol. CVI, No. 19 NEW YORK, MAY 5, 1917 Whole No. 3087

Many Advantages of Gas for Drying Brewers' Vats Make Such Installations Readily Obtainable

Other Uses of Gas in Brewing and Bottling Industries Discussed—Slowness of Process, Incomplete Combustion and Danger of Asphyxiation and Fires Arguments Against Charcoal Furnace for Vat Drying—Cost of Operation and Also Slowness Count Against Electric Dryers

By GILBERT C. SHADWELL

The use of gas in the brewing and bottling industries is, unfortunately, somewhat meager, but deserves more than passing mention.

These uses include vat drying, pitching kegs, depitching kegs (*i. e.*, melting pitch off the inside of kegs), soldering and brazing ammonia pipes, heating special varnish-melting kettles for revarnishing of vats, and the roasting of malt.

In the case of the bottling industry, gas is employed for use with water stills, tank furnaces for "curing" or sterilizing bottled beer, etc.; kettles for cooking syrups, steam boilers, and water heaters.

Vat drying being, perhaps, the most important operation, will be considered first.

Sediment in Vats.

In the fall, when the beer has been withdrawn from the vats, which are usually made of wood, ranging from 2,400 to 7,500 gal., a very thick sediment has collected. This deposit has to be removed before the vat can be re-employed. This is accomplished by thoroughly scrubbing it with hot water, after which it has to be dried by artificial heat.

The drying is necessary so that a special "varnish" preparation may be applied, the previous varnish having been removed with the sediment. The "revarnishing" is carried out by the application of several coats.

The vat is dried after cleaning and then again after each coat of varnish has been applied. The number of coatings necessary varies in different breweries.

The drying of the vats has always been a problem to the brewmaster. The long time required in drying by charcoal and the results obtained from other solid fuels have all been most unsatisfactory. The heat required used to be (and still is, to some extent) obtained from small portable charcoal heaters, but this is not only inconvenient, unsanitary, and dangerous, but the heating and drying is accomplished with great difficulty and loss of time, due to the lack of air necessary for proper combustion, as there is no opening for this purpose except a small manhole on the side near the floor, and in many cases there is not much provision at the top for ventilation. Hence the charcoal or other solid fuel is only partially consumed. Even an atmospheric gas burner would not work well in such cases.

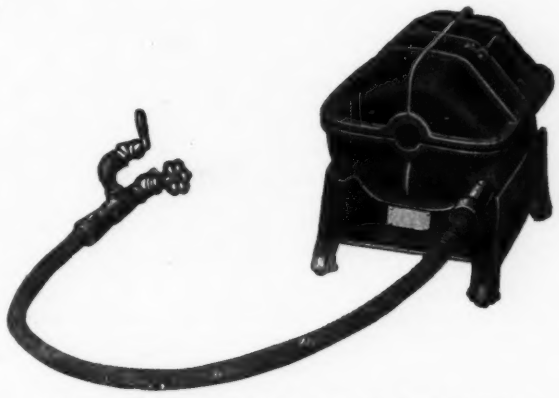

FIG. 1. STANDARD TYPE GAS-FIRED VAT DRYER.

When charcoal is employed the danger of asphyxiation is always present, for it must not be forgotten that in order to put out the fire when the drying is finished the operator has to enter the vat. The only alternative is to let the fire burn right out. This latter is obviously a great waste of time.

A gas blast heater can be inserted at the manhole and can be started or stopped instantly. Also it is quite

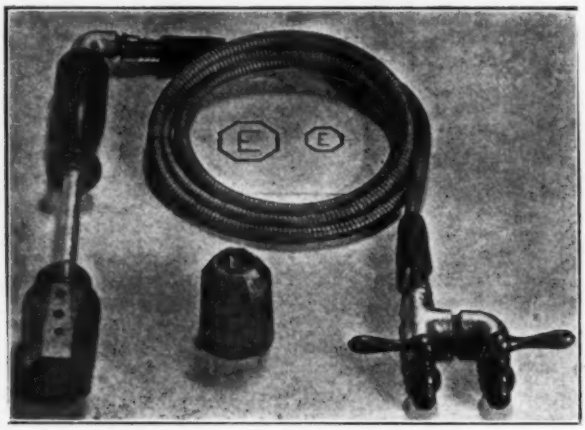

FIG. 2. KEG BRANDER HAVING SELF-CONTAINED ATMOSPHERIC BURNER

unnecessary for an operator to enter the vat, so that in this way not only is time saved, but all danger is eliminated.

Use of Electricity for Vat Drying.

The danger of fire from burning charcoal dropping on to the floor of the vat, although not very great on account of the floor being wet, has often proved very expensive, requiring the services of a cooper.

The use of electricity for this work has not met with much success, as the cost of operation is much higher than is usually supposed, and the time of drying is not a great deal better than when charcoal is employed.

When electricity is used the minimum time required for drying a 350 bbl. vat using three heaters—each consuming three kilowatts per hour—is ten hours.

Some operators of privately owned plants often lose sight of the fact that every kilowatt hour of electricity used represents just so many more pounds of coal in the boiler.

It can be readily seen that a dryer for this work must operate under very exacting conditions, but as, fortunately, every brewer has air under pressure available advantage can be taken of a suitable gas appliance having a blast burner.

A standard style appliance of this nature is the vat dryer shown in Fig. 1.

It consists of a cast-iron heater body, heavily reinforced, inside of which the gas is burned. The body rides on a rolling carriage. These two parts are separate and will pass through the smallest manhole.

Gas and air for combustion are supplied through a flexible metallic hose, which can also be used to move the dryer to the center of the vat. It is especially made for this purpose, and will withstand the hard usage and heat to which it is subjected.

Gas Appliance Appeals Strongly to Brewmasters.

Perfect combustion is assured, as the supply of gas and air are both under absolute control from outside the vat. It cannot be smothered, as the combustion takes place entirely within the body, and all the air necessary for combustion is supplied through the burner.

Such a dryer may be run red hot for rapid drying without scorching the floor, as the carriage is equipped with a baffle to obviate this difficulty.

Brewmasters readily appreciate the many annoyances which are eliminated by the use of a simple gas appliance of this nature. No charcoal, with the accompanying ashes. No vile gases, a clean vat ready to varnish as soon as dry, quick work, and always ready.

The larger breweries will use several dryers.

The compressed air which they have will operate them perfectly.

The dimensions of a heater of this character are of interest, as it must be such as to pass through the smallest manhole.

Dimensions Over all*			Gas Cons.† (Cubic ft. per hour)	Gas Conn.	Air Conn.	Shipping Weight (lbs.)
Height	Width	Length				
13″	11″	15″	100	½″	⅜″	90

*In two parts. Will pass through a 9″ x 12″ manhole.
†For 15-20 lbs. (Positive) air pressure, normally.

In connecting an appliance of this character the gas supply used should be at least 1-in. pipe. Air under a pressure of 1½ to 20 lb. through a ¾-in. pipe is required. Air supply is connected to the straight pipe and gas with the offset-lever handle cock.

The manner of operation is very simple. The dryer is placed within the vat, the lid is opened, and the burner lighted by holding a match to it, turning on a little gas at the same time. Enough air should be then turned on to give a blue flame. The lid of dryer is then closed and the gas and air adjusted so that the flame burns entirely within the dryer.

By adopting such a contrivance the largest vat will be dried in about eight hours at a cost of about 8 cents per hour for gas.

Other Uses of Gas.

Gas is also an important adjunct in the pitching and branding of kegs and barrels. The pitching consists of coating the interior of the kegs with pitch to prevent leakage and preserve the contents.

The branding is carried out for identification purposes on all new kegs. For this purpose a hot die is used. This is mounted, as a rule, in a regular machine, which has blast-burner flames impinging on the dies which heat them to a red heat. By this means the lettering can be burned into the wood. In smaller breweries a hand brander is used, which is heated by exterior burners or, what is better, a brander having a self-contained blast burner, such as is shown in Fig. 2.

When a new keg has been branded the inside of it is sprayed with pitch.

This is contained in the pitch kettle, under which are placed the burners for heating the contents to about 380 deg. Fahr. Air pressure is applied to the top of the pitch. A pipe having a nozzle outlet with a number of holes in it at the top enters the kettle and passes down to within a few inches of the bottom. The kegs are placed over this nozzle outlet at the top, so that the hot pitch can be sprayed right into the keg by means of the air pressure above.

Should there be any superfluous pitch it will run back into the overflow.

When old kegs have to be de-pitched the old pitch is melted off by means of a blast-gas burner which is inserted through the bunghole, the gas burner and keg being in the same relative positions as when the pitching is carried out. Live steam is also used at times to accomplish the same object.

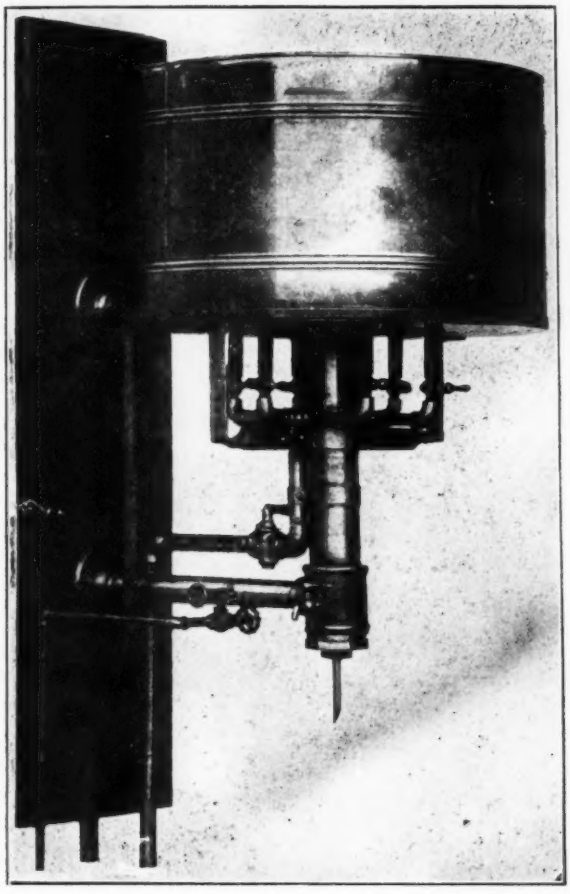

FIG. 3. AUTOMATIC GAS-FIRED WATER STILL

This operation is usually referred to as "de-pitching" or "pre-heating."

Gas is also used for melting a special varnish preparation with which the vats, etc., are sometimes coated. When this preparation has been melted it is applied to the vat, and at the same time a brazing burner is used to facilitate spreading the varnish.

The roasting of malt is often carried out with coke or high-grade anthracite, but gas is in many respects a preferable fuel and is employed in some localities.

Soldering and brazing will be dwelt with in a later article. These operations are occasionally carried out in breweries in connection with repair work. For instance, the ammonia pipes for the refrigeration work have to be brazed from time to time, and some soldering work is also occasionally involved.

Bottling.

One of the largest operations involved in the bottler's factory is the cleaning of his bottles. This is accomplished in various ways. The usual method consists of the application of hot water on the outside, for the removal of labels and dirt, and on the inside in order to cleanse them. Brushes revolve in the bottles to assist the cleaning and to take out any foreign matter which may be present. The water-heater and steam boiler thus find a place in this part of the business.

The "curing" or "sterilizing" of bottled beer and certain other beverages is an operation conducted by many bottlers. This operation, which is occasionally referred to as "steaming," is carried out in a large tank furnace. The tank contains water, into which the cases of beer are placed. The contents are then heated up to about 180 to 200 deg. Fahr. for about a couple of hours. By this means the keeping qualities of the product are increased to many months. This appliance is illustrated, and details of the operation are explained in the AMERICAN GAS ENGINEERING JOURNAL, on pages 171-172 of the issue of Feb. 17.

The manufacture of syrups for making soda, sarsaparilla, etc., was described in the issue of Feb. 3 (see pages 122 and 126, Figs. 2 and 8). Several types of cauldron furnaces for this purpose are illustrated in that article, to which reference should be made.

Distilled Water.

Distilled water is a very necessary product to some bottlers. The water is sometimes bottled as it comes from the still, or it may have certain salts added. Again, it may be charged with carbonic acid gas (carbon dioxide) or otherwise treated and then bottled for shipment. The distillation of water is conveniently carried out in an automatic gas-fired water still, such as is shown in Fig. 3, which can be used to advantage in this trade. The operation and construction of such gas-fired stills will be described in greater detail in a separate article.

In the manufacture of sodas, etc., the syrup to be added is usually measured into the water by an automatic device, making the proportions of water and syrup the same whatever the quantity used.

Details of this appliance are, however, outside the scope of this article.

Some bottlers make their own bottle caps. This, however, is a line of business more closely allied to tin-plate decoration and lacquering. It will therefore be dealt with in conjunction with a later article on lacquering and other ovens.

Reckless Extravagance of Early Natural Gas Responsible for Present Conditions

In a recent letter telling of the conditions in the natural gas field, B. M. Parker, manager of the Citizens Natural Gas Company, Knightstown, Ind., makes some very interesting comments.

Twenty-four years' use of natural gas in Central Indiana has reduced the rock pressure from about an average of 270 lb. to 40 lb. The selling price has increased from 50 cents per month flat rate to 50 cents per thousand feet. In this locality about 15 ft. in Trenton rock is as far as it is safe to drill, on account of salt water. The wells are operated largely without tubing, to permit of frequent bailing, to rid them of salt water.

Mr. Parker goes on to say that reckless extravagance in the use of gas when first discovered is largely responsible for present conditions of the wells. And cheap gas was also responsible for the reckless waste of timber used for fuel, which would be good property now. The gas in this district is not to be depended upon for fuel in cold weather.

It is also believed that Government restriction for the use of natural gas to domestic consumers only, and at a maximum cost, as compared with other fuel, would have saved the gas and wood, too.

Inauguration of Free Maintenance Stimulates Sales of Gas for Lighting at Holyoke

Interesting Partial Installation of Modern Gas Lamps in Church of the Perpetual Help—Contrast with Open Flame Burners

By M. A. CADIEUX
City of Holyoke Gas and Electric Department

A partial installation of modern gas lighting has been made in the Church of the Perpetual Help in Holyoke, Mass.

A pillar on each side of the altar has been equipped with a two-branched fixture on which has been placed C.E-Z lamps, with very good effect, illuminating the chancel as brightly as though with the most modern electric lights, the light, however, being softer.

Two more C.E-Z lamps have been placed on a long double branched fixture in the front of the church and two on the side walls near the entrance.

The remainder of the church is still lighted with open flame burners, and a comparison of the two lights thus made possible is a very good argument in favor of retaining gas-lighting, as its possibilities are here very clearly shown. At one glance one can readily see the "before" and "after" stage of gas lighting.

These lights which can be secured only through central stations were installed by a Free Maintenance Department of the local gas company. All installations, adjustments, cleaning of glassware is done free of charge and the material used in such installation is sold at cost. The inauguration of this Free Maintenance Department has materially increased the sale and use of gas in the city.

Gives Hints on Distribution

L. K. Whitehead Discusses Laying of High and Low Pressure Mains and Service Installations—Meter Connections

In his paper on "Gas Distribution," presented at the annual meeting of the Southwestern Electrical & Gas Association, L. K. Whitehead, superintendent of the gas department of the Southwestern Gas & Electric Company of Texarkana, gives the following hints on distribution:

High pressure mains should be laid with a fall to low points and drips installed, fitted with cocks at the surface of the ground so that the drips can be blown.

Care should be taken that all mains are laid deep enough, so that the services on the long side of the street will fall to the main, also that the bottom of the trench is good solid ground and, in the event that it is necessary to block up the main, we should use brick or rock, but never wood.

The best practice for laying high pressure main is, when you do not have sufficient holder capacity, to lay it in a belt around the city and feed back into the low pressure system at convenient points with regulators or reducing valves at a pressure of from four to eight ounces.

Advantage of Using High Pressure

With artificial gas, high pressure is considered anything above 10 lb. per square inch; in natural gas, anything above 25 lb. per square inch.

The advantage of using high pressure is that you can use smaller mains, thereby cutting down the initial cost, but your chance of leakage will be greater.

All high pressure mains, when laid, should be tested with air at about twice the pressure you contemplate carrying on the line, and the test should be left on several hours and notes should be taken of the drop, while the workmen are going over the main with soap suds to discover any leaks that may appear.

Care should be taken to choose the streets with the least traffic on which to lay important feeders, and the alleys should always be used in the business district wherever possible. In laying out mains, we should put in crosses at the street intersections of ample size to take care of any future business that might arise.

When it is necessary to cross railroads, care must be taken to get the mains deep enough to avoid any vibration caused by heavy trains. A joint should never be directly under either rail. It will pay to go to considerable expense to keep all joints out from under the railroad tracks.

Services should never be laid smaller than 1¼-in. pipe and should be fitted with a curb cock and box and, wherever possible, should be laid with fall to the main.

Where the main is 4-in. cast iron or smaller, it should not be tapped larger than 1 in., unless it is saddled, and all wrought iron or steel pipes should be saddled for service connections.

On low pressure services, the service should come off of the main with two street ells, making a swing joint, so as to take care of any variation of the main.

Installing Meters

High pressure services are laid the same as low pressure, except the main is always saddled and a service tee is screwed into the saddle and a street ell into the side outlet of the service tee. The ditch is then dug to the curb and the pipe screwed into the street ell with a curb cock at the curb open. The main is drilled down through the service tee. When drilling is completed, the drilling machine is removed at the service tee, plugged, and the cock shut off. This method can be successfully used on all pressures up to 50 lb., but above 50 lb. the drilling of the main should be through a gate valve or cock.

Where consumers are taken off the high pressure line, an individual regulator is installed just inside of property line. Never put a regulator inside of the building, as it would increase the fire and explosion risk to a large extent.

Meters should have careful attention, as to setting, removing and keeping in repair, as they are the heart of your business.

Meters should be set in a convenient, dry, and protected place, as near the main as possible, so as to provide easy access for reading and prevent the fraudulent use of gas.

The connections on meters are of three forms, rigid, semi-rigid, and flexible, and the best way is a disputed question with gas men. The rigid way, in my opinion, is with straight iron pipe connections to both ears of the meter; the semi-rigid is one lead pipe connection and one iron pipe connection; the flexible is with both ears connected with lead pipes.

When the laying of mains is completed, a careful record should be made in the nature of a drawing of the street by blocks, showing depths at different points distance from the property line, location of fittings, drips, etc. Services should be treated in this same manner. The card system for services is being used very successfully by many companies.

Gas Arc in Nearly Every Case a Bigger Revenue Producer than a Gas Range

H. H. Dunn Advocates Penalizing Non-Use of Lighting Equipment—Gas Fixture Just as Much a Piece of Machinery as the Watch

A gas fixture is just as much a piece of machinery as the watch, declared H. H. Dunn, industrial engineer of the Roanoke (Va.) Gas Company, in his paper on "Modern Gas Lighting," presented at the annual convention of the Southern Gas Association. Yet you would not let your watch get in the condition that you have seen gas fixtures.

There is nothing more disreputable to a gas man than a gas fixture all broken, dirty and unkempt or an electric bulb to the electric man,—in the last stages of consumption. (Not the man,—the bulb.)

Let us take the thorn of maintenance and look at it in the right light. Time after time we have seen a consumer cheerfully pay a gas bill of $6 or $7, and on this gas bill, a small maintenance charge of 50 cents, and we have lost many a good consumer over the 50 cents maintenance charge which we insisted on being paid.

On the other hand, free maintenance is a big mistake.

What good, from a revenue standpoint, is a gas-arc or a lighting fixture in a gas company's store-room? Also what good does this same fixture to a gas company, hanging on a gas out-let in a store or home, if it is not used?

If you charge them maintenance, the biggest portion of your consumers won't allow you to hang it on a gas out-let. If you don't charge a thing, they won't use it unless they have to,—but make some kind of penalty for not using and you will get a revenue.

Gas Arc a Bigger Revenue Producer Than a Range

An arc lamp is a bigger revenue producer in nearly every case than a gas range.

We have a motor-cycle man who spends his entire time in adjusting ranges, blowing services, and also a demonstrator to teach how to use the range. Also we spend a big sum of money in running free mains, free services and some piping free in order to get range consumers. Quite a great many of these consumers use the 50 cents minimum and are a dead loss to any gas company.

On the other hand, we have electric competition: that furnishes carbon lamps free any hour of the day or night; renews blow-out fuses; delivers a 36 cp. Mazda lamp to any part of the city for 25 cents that costs 19 cents; wires commercial houses free; installs 250 watt Tungsten lamps and fixtures free and cleans and maintains them free.

The consumer says: "Why, I use your manufactured products every month in the year, and you make a continual profit,—why can't your manufactured products stand the expense of maintenance? Any other line of business as a rule, selling an installation or an article, makes but one profit, at the time of the sale, while with you I am an all year round producer of a revenue."

Now we know there are any number of arguments—pro and con—but the fact stands, if a manufacturer sells a coffee urn to a man who uses gas, his profit is on the sale, while we get a steady revenue. True we adjust burners free and try always to give good service that pays as well,—for the more good service we give, the better it pays and service is only an effort on our part.

Maintenance Charges and Poor Service the Making of Competitors

Maintenance charges and poor service have been the making of our competitors. I don't believe we lose one customer in five from excessive gas bills where we do from the above two causes.

There is a right solution of this problem. If we do not solve it soon by a plan that will apply to all gas companies, we are going to be the losers, and our competitors the gainers.

It must be a standard plan for all gas companies. The time has gone by when each community can stand by its own local conditions. For the gas and electric companies in Lynchburg and other cities, has its effects in Roanoke. If the shifting population has been educated in any town as a believer in gas or electricity, it will bring its convictions and arguments into your town or city.

Make a standard maintenance charge of 15 cents for all small single-mantle fixtures—25 cents for all single-mantle arcs and 50 cents for all three or five-mantle arcs,—each consumer having one meter for using gas for all purposes.

Say you install three single-mantle small lights and he uses 1,000 ft. of gas. Charge off this maintenance for his three lights, or in other words, for every 500 ft. of gas used, charge off 25 cents of maintenance. If he has one three or five-mantle arc, he must use 1,000 ft. of your product to charge off the entire amount of maintenance. If he uses 500 ft. on this one arc, he should be charged 25 cents maintenance.

Penalty Charge

This 25 cents charge penalizes him for not using enough gas to have the maintenance charged off, which makes this plan a penalty for not using our product.

The plan does not need extra forms, red tape or extra trouble as the gas bill comes from the gas ledger with the meter statement to the merchandise and maintenance ledger for these extra items and charges anyway. It favors your good consumer and he will install gas lights and use more gas for illumination than he would upon a straight charge for maintenance. Another thing in its favor is that it gives your good consumer and yourself more pleasure in a little extra service, for you both reap the benefit.

Selling gas and gas lighting cannot be done unless it is sold by a gas man, and by that statement, success or failure results.

One of the greatest selling forces of this country to-day is the National Cash Register Company of Dayton, Ohio. I had the pleasure of going through

with an Owl Class at this plant. I asked one of the master salesmen of this age, Hugh Chalmers, who was the manager at that time, what was it that sold and continued to sell cash registers. He said,—" 'enthusiasm,' and it always will sell them."

There you have the same principle that sells and always will sell gas lighting.

Combination companies of electric and gas, choke the life out of a good gas-lighting salesman,—for if you want business to-day, you have to fight for it, and to fight for it you have to have enthusiasm, first, last and all the time.

It doesn't make any difference what sales line you follow,—it doesn't make any difference what plan you use, but if you use common-sense arguments which you yourself believe in, you can convince your customer that you are right,—even if you do not sell him the first time. You have planted the seed and if you continue to go back and water the seed, with more enthusiasm and good arguments, you will eventually gather the fruit.

The selling points in favor of gas are so many and the arguments against it are so few that I will not use but few of each in this paper.

Simple Illustrations

The points on which to use the most stress are those that appeal to every consumer: More light, of better quality and less expense. The ease of this kind of illumination on the eye and the great advantage of healthfulness, in consuming the air through a gas light in a store or a home, can be proven.

Each argument should be used and a simple illustration should always drive it home. More light, of better quality, for less money can be easily proven by putting one gas light on a meter and using a rated electric lamp.

Prove the candle power with such arguments as the life of a filament in an electric bulb, which will always use the same amount of current, will deteriorate in candle power. A gas mantle may also shrink 10 per cent., but it is soon replaced by a full candle power mantle, so that you always get full candle power from a gas mantle, which should always be the basis of pay.

It is the only light to use in matching colors, bringing out the true colors in showing rugs and color designs, and diamonds.

Cigar Smoke Test

In proving its sanitary qualities, the smoke in a room from a cigar will always gravitate to a gas light and you can have an actual demonstration of this truth. You will find that simple arguments and examples are the best in driving home the fact of gas as the modern light.

One time I interviewed and tried out a line of talk to see if technical knowledge was the thing to use on a lighting prospect. I went to a business man with it to watch the effect.

I started in with the Zona-Flux curve and the Flux Summation curve, showing the height in a left-handed vertical column directly below each distance in the top horizontal row, the upper representing the angle from the vertical, at which point represented by the height and distance, under consideration lies. The middle quantity is that by which the candle power at this angle must be multiplied to give the horizontal illumination at this point and we must multiply to give in the bottom quantity the normal illumination, " so you see you get 150 candle power at 65 deg. of the photometric curve."

I thought I was doing fine, when he looked up and told me to keep it as he had no farm, but would I tell him how much more light a three-mantle gas arc would give than a 250 watt Tungsten, and the difference in dollars and cents.

Now, just one more point in the home lighting. Get the house or building piped by all means. The center drop if you can, but by all means get two openings in each room, 7 ft. from the floor, somehow, somewhere. The center gas pipe drop has done more for the electric company than any thing I know of, as it has come to be the finest anchor in the world for an electric fixture. But if we get two side-wall openings, it always gives us the chance to put in not only lighting fixtures but other appliances, and with the gas light in any room you will find that it is used in preference every time, when a good strong, soft light for any purpose is needed.

Gas Company Should Push Industrial Business So Hard that Every Manufacturer Will Consult It Previous to Making Change in Heating Operations

L. Gaston Describes Knoxville Methods — Painstaking Manner of Overcoming Skepticism in Cafe Field — Meeting Electric Competition — Maintenance Service

The gas company should be classed both as a retailer and wholesaler, declared L. Gaston, manager of the New Business Department of the Knoxville (Tenn.) Gas Company, in his paper on industrial fuel, presented at the Southern Gas Association Convention. You can afford to sell a customer a large quantity of gas cheaper than you can sell it to the customer who uses only a small amount.

The block schedule of rates is probably the most desirable one to use; that is, charge so much for the first 25,000 or 50,000 cu. ft. and a certain amount for the next 25,000 and so on down the line until you reach the minimum price for which you can sell and still retain a profit.

However, this does not mean that a special rate is absolutely necessary, as a great deal of industrial business has been closed and will continue to be closed at existing rates. There are industrial possibilities in every town that can be closed if given the proper attention.

Displaying Industrial Appliances

Every gas company, no matter how large or how small should have on display a number of industrial fuel appliances; preferably those for which they have prospects, or those that could be used by some of the industries in their particular town.

The salesman should be thoroughly familiar with these appliances. He would then be in a position to bring his prospective customers into the salesroom and demonstrate how much better their work can be done with gas.

A study of each particular problem and intensified efforts on one kind of appliance at a time will result in the placing of the greatest number of industrial appliances in the shortest length of time.

Recognizing the possibilities of the use of gas fuel

in the industrial fields, our company in Knoxville is making a systematic and determined effort to secure the big industrial business. An industrial squad was formed and a campaign started just about a year ago. The goal of the campaign is to convert all industrial heating operations using crude fuels to gas fuels.

Industrial Canvass

The first step was an industrial canvass. Every industry was visited whether it was on or off the company's mains, carrying out the idea of securing all the industrial heating operations. Data was secured on all heating operations, whether they were in café or hotel kitchens, or in the forge rooms or foundries of the large shops.

In this canvass the type of appliance was noted; kind, amount and cost of fuel; labor and labor cost for operating appliances; production and quality of work. In each case we made it a point to get in touch with the management of an industry and find it the best means of gaining a good entrance to secure the desired information, and also an opening for returning on future occasions.

The hardest information to obtain was cost figures. Even when an industry was willing to furnish us with cost figures, they often did not have complete cost of their heating operations. By using a little tact with the foreman and men, and by watching the heating operations, good approximate figures could be secured.

On the completion of the canvass the data was compiled and carefully discussed. The squad divided itself into two parts. One part specialized on the cafés and hotels and the other part specialized on the metallurgical industries. However, on some of the larger propositions the squad worked together.

Findings in Metallurgical Industries

In the metallurgical industries our canvass showed that the big heating operations were high temperature work, such as heating steel for forging. We were confronted with the problem of finding appliances for this work.

There are small forges on the market for light work where the fuel advantage overshadows the increased cost of operation, but we found no appliances manufactured that would do the big heavy work with an efficiency that we could hope to compete with present operating costs, including labor and machine operation.

As an illustration of the problem, I will give our experience with one of the large manufacturers of Knoxville. This company manufactures mine cars and equipment. Their heating operations are the forging of car axles and car frames for which they use even coke.

The president of the company was approached on the matter of the best treatment of their dies and tools and rivet heating with gas. His answer was: "That is only a hundredth part of my total heating operations, I would like you to give me figures on doing all my work with gas."

He had taken a trip up through Ohio and had seen the large natural gas forging and heating furnaces. He came back very much impressed with their fine operations, and had discussed with the other members of the firm the matter of erecting gas producers and the use of gas for their forging work.

In this particular case, we are now making arrangements to install a forging furnace and carry on a series of experiments. The outlook is that we are going to be very successful in obtaining this for permanent business, and will be successful in getting all the forging business in Knoxville.

Copper and Brass Working

The largest customer we have at the present time is a manufacturer of heat regulating devices and valve specialties. Their work is mainly with copper and brass. After long investigation they are fully convinced that gas adapts itself better for their annealing and heat treatment work than any other fuel; practically all their heating operations are done with gas, with the exception of their brass and copper melting in the brass foundry. For this operation they are using fuel oil, but we now have a proposition up with them for doing this work with gas also.

The cafés and hotels also presented a most interesting problem, as none of them were using gas exclusively. The café owners' experience with gas for cooking was limited to a short order range, coffee urn, broiler and cake griddle. In planning our all-gas kitchen campaign, we selected the three largest and best cafés to start on.

We obtained data as to the amount of coal used per month, the cost of same, and the average monthly gas consumption on the small appliances then in use.

With this information at hand we computed, on a heat unit basis, estimating the coal equipment as 50 per cent. efficient, then made an estimate of the comparative cost of gas operation.

We did not hope to compete with low fuel costs. It was our ambition to convince the café owner of the possibilities of gas as a fuel, show him its many advantages over other fuels, and demonstrate to him the practicability of its application to his particular conditions.

Overcoming Skepticism

With our approximate cost figures applicable to each café operation, we started a most intensive and persistent solicitation of their application. At this state of the game, everything seemed favorable, but we now were to encounter our biggest obstacle.—Skepticism, as to the successful application to each individual case. They found no objections to our estimated costs.

The trouble was, they could not believe it could be done. And no amount of argument or reference to other successfully operated cafés would convince these men that a successful application was possible to their particular conditions.

We spent hours and hours trying to convince them, but without being successful in getting the consent of any one of the three for an installation.

After exerting every effort under these conditions without success, we succeeded in getting the consent of one for a thirty-day trial with the understanding that the equipment be purchased and operated for one year thereafter, providing the test was satisfactory from a cost and efficiency standpoint.

Two sections of hotel ranges and a combination broiler, toaster and griddle were installed, displacing a three-section coal range and a charcoal broiler.

The installation made, our next problem was the education of the colored chefs who were inexperienced in the operation of gas equipment. It is very essential that you get the co-operation of the chef; at first they

were skeptical as to the efficiency of the equipment, but, fortunately, the first night of the installation, they had a much heavier meal (a la carte) than usual, and they got the work out on the two sections of gas range with greater speed than they had been able to do on the three-section coal range, and the food was prepared in much better shape. The teaching of economical operation of the equipment to these chefs was no easy task —it took no end of hard work.

Educating the Users

We watched the operation for thirty days, and the greater part of the time from six o'clock in the morning until twelve o'clock at night. The greatest amount of diplomacy was used at all times that we might not court their displeasure and make them antagonistic.

The result was that we received their co-operation on the test, the results of which were most satisfactory. The gas consumption ran 32,200 cu. ft. less than our estimate. This was, of course, very gratifying to ourselves and the café men were greatly pleased; not only with the economical results, but more so with the efficiency of the equipment.

During the test, meter readings were taken four times daily and data compiled as to the amount and nature of food cooked, number of persons served, speed of operation and service.

This test was not only watched with interest by other café owners, but by the patrons of the café as well. It is needless to say that the café owner purchased the equipment, signed a contract for service for a year and is more than pleased with his investment.

Two other installations of the same size, both bona-fide sales have since been made, and have been given practically the same attention as to the education of the chefs in the operation of the equipment. These installations are both giving the best of satisfaction and we are progressing with a most intensive campaign to eliminate coal from every café and hotel kitchen in Knoxville.

Saving in a Bakery

Our attention is not devoted to hotel, café and metallurgical industries alone. Every industry is considered a prospect for industrial fuel.

We found a baker who had a large reel oven which he fired with coke. The oven is some twelve by fifteen feet square by twenty feet high inside, and contained a reel fifteen feet in diameter.

He had much difficulty in controlling temperatures on the oven as well as producing a clean product, as the oven was direct fired.

We took up the proposition with him of firing with gas. An installation of refractory gas burners was made and the oven worked beautifully. The desired temperature could be held constantly and the dirt was eliminated, thus producing a superior product.

Electric Competition

Through labor saving effected by the gas fuel, the total cost of operation of the bakery is slightly greater than with coke and much more satisfactory. In conversation with the baker after the installation was completed and had been tested, he said, "I did not think you could do it with city gas, at least at a cost which would not be prohibitive."

One case of electric heating competition in the industrial field was encountered. A tinware manufacturer was using a large number of blast soldering furnaces of his own design. The furnaces were very inefficient, not only in fuel consumption, but burned up the irons rapidly. The electric company had a proposition up with him for the installation of electric soldering irons. In this case we demonstrated to the manufacturer, a soldering furnace operated with an atmospheric burner and doing the same work on 50 per cent. of the gas consumption of the other furnace. As a result the gas furnaces were installed not only doing away with the power for blast, but cutting the fuel consumption. The saving in fuel alone paid for the appliances in five months.

The manufacturer was much pleased with the change, and although the revenue from him was reduced for the time being, we retain a customer who will consult us before making any change in his heating operations in the future.

This demonstrated most clearly that we must select and install the most efficient appliances for any heating operation.

Every gas company should push its industrial business so hard that every manufacturer will consult the gas company before making any change in any of his heating opertions.

Giving Service

The industrial man must be familiar with manufacturing methods where heat is involved. Indeed he must be so familiar with them that he will be able to show how various heating operations are done the new way, "The Gas Way." The idea if often held that the gas man must apply his fuel to an operation in a similar manner as the crude fuels are applied, instead of changing an operation to suit the best application of the gas fuel.

One would not think of putting a gas burner in a fire box of a coal range as the efficiency of gas for cooking would be very low. But with the gas range the fuel is applied in such a manner that gas has driven coal out of the modern kitchen.

In order to give your customer the best possible service, you must have the complete co-operation of every man in your employ. You should also take advantage of the assistance and co-operation of the different industrial fuel manufacturers.

The manufacturer spends large sums of money developing appliances and usually employs the best talent obtainable. He is in a position not only to inform you as to the best appliance to install, but will often assist you in actually closing the sale.

It is the duty of every gas company to co-operate with the manufacturer in purchasing the equipment from him instead of trying to make the appliance or merely placing burners under the appliance or using any other makeshift methods. Encourage the manufacturer with your orders and he will reciprocate by making the most efficient appliances possible.

In any industry, both the management and men expect the industrial man to be thoroughly familiar with the heating problems and when installations are made, they expect the industrial man to instruct them how to do their work with gas.

He must be a first class chef, baker, tailor, foundry man, forge man, steel expert and in fact, expert jack-of-all-trades.

One of the most important features in industrial work, is the proper training of the man that uses the appliance, so that he will get the maximum efficiency with the minimum amount of gas. The operator should be educated to increase his efficiency.

We all know that it is not so much the use of gas that gives us the high bills, but it is the misuse that really causes dissatisfaction.

For instance, we installed a blast candy furnace to cook, "potato chips" and the manufacturer complained that the unit cost of operation was too high. Upon investigation it was learned that it took ten minutes to cook a batch of potato chips and that eight minutes were required to refill the basket. By explaining that he did not follow out our suggestion that he buy another basket and persuading him to place his order at once for an additional basket, and filling it while the other one was cooking, he could turn out his product with greater rapidity, with the result that he could cook two baskets in 22 minutes, as against 36 minutes without the additional basket.

Trial Installations Result in Many Sales

In another case we were accused of misrepresenting a rivet heater. The purchaser was of the opinion that it would not heat rivets fast enough to keep two men busy. Upon investigation we learned that they failed to feed the heater fast enough.

By simply demonstrating this for a short time, he was fully convinced that the trouble was due to the inefficiency of the man and not the appliance.

A very important feature in the industrial fuel business is the installation of appliances. They should be placed in the most convenient place for the operation.

Trial installations result in a great many sales. If you are willing to install an appliance on trial, you immediately increase your prospective customers' confidence and if you take the precaution to install only the appliance best adapted to his particular work, it will in almost every case, become a permanent part of his equipment. A quarter-inch brazing burner installed for a wheelwright resulted in the sale of a tire heater inside of thirty days. With this tire heater he removed 600 tires in one month at a cost of $15 for gas, which was much cheaper than was his former method.

Need of Industrial Expert

In connection with the industrial fuel work, comes the establishment of a service, or inspection, department. This department should be composed of men trained in the use of appliances and it is their duty to make a routine inspection of each industrial installation at least once a month, and in some cases once a week or more often depending on the nature of the installation. Any adjustments or repairs to the appliance that are found necessary should be made at once. This insures the customer that his appliances are in correct working order.

When an industry depends on gas for its heating operations it is easily seen that service such as this is worth much to it.

Now just a word to the smaller companies who feel that they cannot afford an industrial expert. I believe that this attitude should change to the feeling that they cannot afford to be without one.

At any rate some one man in the employ of the company should be given special training to handle industrial fuel problems, and in a very short time almost any ambitious man which you would select will be turning in profitable business which is now being done with other than gas fuel.

Two years ago the Knoxville Gas Company conducted an industrial campaign without the aid of an industrial man, and taking thirty days training under the supervision of our general manager, A. W. Young, succeeded in selling in thirty days, 181 industrial appliances.

A Convenient Apparatus for Determining Heat Efficiency of Gas Oil

F. L. Weisser Describes Cracking Device which Gives Results which Closely Resemble Actual Operating Conditions

In a paper presented at the annual convention of the Southwestern Electrical and Gas Association, held in Dallas, Texas, April 26 to 28, F. L. Weisser, superintendent of the gas department of the San Antonio Gas & Electric Company, describes the following method of determining the heat efficiency of gas oil:

A Cracking Process.

A 2-in. steel pipe about 40 in. long, capped at both ends, is surrounded by a layer of fire clay about 1½-in. thick and suspended at an angle of about 15 deg., in a furnace lined with fire brick. The length of the furnace is equal to the length of the 2-in. pipe and its internal dimensions are such as to provide ample space for air circulation.

The fire clay tube (or cracking tube) is heated by means of a ¾-in. pipe blast burner, equal in length to the fire clay tube, and having two rows of 3/32-in. perforations spaced about ½-in. apart.

One side of the furnace is provided with four holes through which the ends of a thermocouple are inserted.

The gas oil and the blue gas are introduced through a ¼-in. pipe tapped into the cap at the upper end of the fire clay tube, the finished gas is taken off through a 1-in. pipe tapped into the cap at the lower end of the fire clay tube.

The blue gas may be taken from the generator of a regular water gas set and stored in a small holder, a portion of which is used for analysis and the remainder is passed through the cracking tube to be enriched with the sample of gas oil to be tested.

Measuring Amount of Blue Gas

The amount of blue gas used is measured by means of a test meter placed at the outlet of the storage holder in which the blue gas is stored. The sample of gas oil is fed into the cracking tube directly from a measuring burette graduated in 1/10 c. c. The lower end of the measuring burette is connected with the inlet by means of a tight fitting stopper inserted into a tee, which is placed into the inlet tube and about six inches away from the 2-in. cap, and the upper end of the burette is connected with a ⅛-in. pipe, by means of a tight fitting stopper, which is tapped into the cap at the upper end of the fire clay tube. This connection also serves as a pressure equalizing tube.

The finished gas, after passing through a seal pot connected to the outlet pipe, is passed through a condenser, a series of bead and cotton scrubbers and through a meter into a storage holder.

DATA AND RESULTS

Total gas oil used..... 48.5 c.c.
Furnace temperature.....1,500° F.
Temperature of blue gas..... 84° F.
Temperature of finished gas..... 84° F.
Atmospheric pressure..... 29.3° F.
Correction factor..... .912
Sp. Gr. of enricher at 60° F..... .821
Temperature of enricher..... 108° F.
Heating value of enricher.....19,251 B.t.u. per pound
Duration of test.....20 minutes
Heating value of finished gas
636 B.t.u. per cu. ft. (by calorimeter)
Heating value of blue gas....291 B.t.u. per cu. ft. (calculated)
Total finished gas made.....2.796 cu. ft. (corrected)
Total blue gas used.....2.021 cu. ft. (corrected)
Oil gas made.....2.796 — 2.021 = 0.775 cu. ft.

$$\text{Per cent. of blue gas in total} = \frac{2.021}{2.796} \times 100 = 72.3$$

$$\text{Per cent. of oil gas in total} = \frac{0.775}{2.796} \times 100 = 27.7$$

Total B.t.u. supplied by blue gas per cu. ft. of finished gas..... $291 \times .723 = 210$
Total B.t.u. supplied by oil gas per cu. ft. of finished gas..... $636 - 210 = 426$
Sp. Gr. of enricher at 108° F..... .804
Weight of enricher used.....$48.5 \times .804 = 38.99$ gms.
$38.99 \times .002204 = .0859$ pounds

$$\text{Weight of enricher per gallon} = .804 \times 8.34 = 6.71 \text{ pounds}$$

$$\text{Gallons enricher used} = \frac{.0859}{6.71} = 0.0128$$

$$\text{Gallons enricher used per cu. ft. of gas made} = \frac{0.0128}{2.796} = .00457$$

$$\text{Total B.t.u. supplied per gal. of enricher} = \frac{426}{.00457} = 93{,}200$$

$$\text{Total B.t.u. supplied per lb. of enricher} = \frac{93{,}200}{6.71} = 13{,}890$$

$$\text{Per cent. B.t.u. in enricher transferred to the finished gas} = \frac{13{,}890}{19{,}251} \times 100 = 72.1$$

TUBE TO BE HEATED UNIFORMLY

To perform the test, the temperature of the furnace is brought up to the value at which it is desired to perform the test, which is indicated by the electric pyrometer. This requires about two hours. It is very important to have the cracking tube heated uniformly and that the temperature be kept constant throughout the test.

The storage holder having been filled with blue gas and the measuring burette with the sample of gas oil to be tested, the apparatus is first well purged with water gas in order to expel all the air and to test the joints for tightness. The following initial readings are then taken and recorded: The oil measuring burette; the blue gas meter; the finished gas meter; the temperature of the furnace; the temperature of the gas oil, and the temperature of the finished gas at the inlet of the finished gas meter.

The blue gas is then passed through the cracking tube along with the gas oil until from four to five cubic feet of finished gas have been made. Readings of the various thermometers are taken at about two minute intervals throughout the entire test.

The calculations are then made as indicated on the data and results shown below. Attention is called to the fact that the accompanying data represents the results of one test chosen at random from the records of our laboratory, and it is to serve merely as an illustration to show the method employed in order to obtain the information desired.

The test, as shown on the data sheet, was performed at a temperature of 1500 deg. Fahr. from a sample of gas oil which may be considered a fairly good grade of enricher. It is to be noted that the finished gas is made up of 72.3 per cent. of blue gas and 27.7 per cent. of oil gas.

The heating value of the finished gas is 636 B.t.u per cubic foot, and that of the blue gas is 291 B.t.u. per cubic foot.

It is seen furthermore that a gallon of this gas oil will supply approximately 93,200 B.t.u. or a total of 72.1 per cent. of the total heat value contained in the enricher, when it is cracked up at a temperature of 1,500 deg. Fahr. in the carburetor.

Similar tests are made from the same sample of gas oil at different temperatures, and a comparison of the results thus obtained will be of material aid in the way of determining the proper use of a given grade of gas oil. In addition to the number of heat units supplied by the gas oil per unit quantity per cubic foot of finished gas, other factors must be taken into consideration in order to determine the proper method of operation for the particular grade of gas oil under investigation; for instance, the formation of free carbon, the production of tar and of naphthalene.

Paris Streets to be Lighted by Kerosene

Reversion to Oil Lamp Necessitated by Coal Shortage—Supporting Argument is that It Is Better than Nothing

By FRANCIS MILTOUN

We have all seen pictures of Renaissance days when Paris streets were lighted by the humble *falot*, which might be a resinous pine knot, a colza or a whale oil lamp, or what not. And it is not so many years ago that whole quarters of *la ville lumière* were lighted by kerosene lamps, placed in the lamp post of convention.

There are hundreds of them still existing. I came across one last night in my own quarter, the seventh arrondissement, at the corner of the Rue de Talleyrand and the Rue de Constantine, burning feebly. Argumentatively a policeman told me that which was true; that "it was better than nothing."

In view of the crisis and the possible shortage of gas for municipal lighting, the City Council has agreed to experiment with the old material and see what can be done with the humble oil lamp *à reservoir*. The famous Esplanade des Invalides, one of the most gracious and extensive squares in Europe, is henceforth, until further notice, to be so lighted.

As to the results, as to the effects, we shall see. It may be picturesque, it would certainly be costly of upkeep if labor is to be considered, and it will certainly be more costly than gas illuminant, if the latter were to be available.

That is what the Paris Municipal Council thinks it will not be, and to meet the situation, to bridge the interval until Paris shall again be a flood of light, they propose to have recourse, as much, or as little, as possible to the processes of a former generation.

Industrial Load Increases English Company's Maximum Day's Demand Fifty Per Cent.

Consumption of One Customer Increases from 500,000 Cu. Ft. to 36,000,000 Cu. Ft. —About 60 Per Cent. of Total Output Now Used for Industrial Purposes

By NORTON H. HUMPHRYS

The effect of war conditions as an advertisement of the capabilities of gas as a fuel, in connection with industrial operations, is illustrated in a remarkable manner by the experiences at Coventry, England. The greatest problem that has had to be faced in that city is the unprecedented demand for gas for industrial purposes, causing the total output to advance from 1156 millions in 1914, to 1566 in 1916—a matter of 35 per cent. The maximum day's demand has risen 50 per cent., and one customer who was accustomed to take about 500,000 cu. ft. per quarter, now requires 36 millions. About 60 per cent. of the total send-out is now consumed for industrial purposes.

The chief consideration which influenced the manufacturers in taking this step was that for many purposes the cost of fuel was of secondary importance as compared with reliability and delicacy of control. On this account, gas had long been recognized as the best fuel for steel hardening and tempering, core drying and japanning ovens. C. B. Jones, in relating the experience of the company before the midland associations of gas managers emphasized the importance of dealing with each case on its merits, as failures due to the insufficiently considered adoption of standard patterns, have been converted into marked successes, by the aid of specially designed apparatus. After experimenting with high pressure gas, air blast, and air and gas mixture systems, it was decided to recommend all consumers, to use air-blast with gas under a moderately raised pressure. Excellent results have been obtained with an air-gas mixture at about one pound per square inch working pressure, but the cost of the necessary appliances is high.

Superiority of Gas as Fuel in Metallurgical Operations

At the annual meeting of the "Institute of Metals," a prominent feature was a general discussion on the melting of non-ferrous metals, in the course of which no less than four papers giving favorable figures as to the use of gas, were submitted. In opening the discussion, the president, Sir G. T. Beilby, said that the desiderate for successful results appeared to be speed of melting, freedom from contamination of the molten metal by gaseous or other impurities, accurate control of temperature, and economy in regard to fuel, labor, and repairs. After considerable experience in the use of fuel, he recommended low pressure gas and air, both measured, ample space for combustion, no tall chimneys, positive pressure in the furnace, and a regenerator of simple design.

W. J. Hocking related some interesting details as to the practice at the Royal Mint, where for the last seven years, gas has replaced the coke furnaces previously employed, and the present installation comprises 16 furnaces for silver, bronze, and cupronickel, and 10 similar but smaller ones for gold. The large furnaces were built of Stourbridge brick, and the interior joints made with a mixture of carborundum, fire sand, and sodium silicate. The burners were of the Brayshaw type, the gas pressure was 3 in., and air was supplied at a pressure of 2½ lb. by means of rotary blowers. The best results were obtained when combustion was complete in the furnace itself. Records extending over five years showed that with gaseous fuel as compared with coke, the output was more than doubled, the cost of fuel reduced 3½ per cent., crucibles 32.6, and labor 19. Ninety-nine hundred tons of coinage metal had been melted with a total consumption of 121 million cu. ft. of gas, at an average cost of 20.6 shillings per ton melted.

Economy of Metal in Brass Melting Outweighs Greater Cost of Fuel

G. B. Brook set forth the results of working tests on the melting of cupronickel (Cu. 80, Ni. 20) in a gas fired pit furnace taking a 60 lb. crucible, and using Sheffield town gas (582 B.t.u.) with air at a pressure of 3-6 lb. mercury. There was no difficulty in obtaining a temperature of 2,520 deg. Fahr., and the advantages of gas as compared with coke were the absence of ashes, no slagging of the melt and reduction of impurities introduced during the operation, economy of fuel as a result of ease of control, and higher speed of melting.

C. M. Walter said that in Birmingham there were 24 miles of high pressure mains, carrying 12 lb. per square inch pressure, and where these were not available, a reciprocating type of compressor, capacity 10,000 cu. ft. of gas per hour, could be installed for about $1,500, and the total cost of compression would be about 1¾*d.* per 1,000. He gave detailed descriptions of several types of furnaces which showed many advantages, one of which was that the economy of metal in brass melting outweighed any extra cost of gas as compared with coke.

The working tests indicated a consumption of 7.6 cu. ft. of gas per pound of brass, 9.4 cu. ft. per pound of cupronickel, and 6.2 cu. ft. per pound of 28 cartridge metal. In a set of twelve 130-lb. brass melting furnaces, the consumption of gas was 5.9 cu. ft. per pound of metal melted, and the maintenance cost 0.7*d.*

High pressure gas is specially suited for melting aluminum and it alloys, and one firm in Birmingham used 25,000 cu. ft. per hour for that purpose.

H. James Yates said that with gas at ordinary and air at 3-lb. pressure, he had obtained a gas consumption of 5.8 to 6.7 cu. ft. per pound of cupronickel, 2.9 to 3.5 cu. ft. per pound of brass, and 4.8 cu. ft. per pound of copper; and that it was possible to obtain 80 heats per pot.

$25,000,000 Worth of Benzene, Etc., from Water Gas

That benzene, toluene and xylene to a value of $25,000,000 could be recovered annually in the manufacture of carburetted water gas in this country if the heat unit standard was generally prevalent is an interesting fact pointed out by Gustav Egloff in an address before the American Chemical Society at Kansas City, April 10.

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Attractive Bracket Design—Its Influence on Outdoor Lighting Sales

Some of our lighting people deplore the enthusiasm with which gas companies are going after industrial business. They fear that they are apt to center their attention too closely on these efforts to the detriment of the lighting business. They have, however, to thank the industrial boom for one very important service.

The stress the industrial men have put upon the importance of the engineering factor has been contagious. It has spread to other branches of the industry. Now, whether it be in connection with a lighting campaign, a water heater campaign or even a domestic cooking campaign, the importance of the engineer looms up in enviable prominence. We do not hear so much of salesmanship now as we do of the improvements, we depend upon the engineer for, which make sales possible.

One large company, at least, has attained marked success in the outdoor lighting end, largely upon the attention it gave to devising brackets which would be an ornament even in daytime to the place of business they fronted. But this company does not have a monopoly on bracket ideas.

An article, which will be published in next week's issue, discusses the bracket situation in detail, points out present-day tendencies in design and illustrates various attractive types. If you are interested in this phase of the gas business do not fail to read this article.

Is the Gas Industry Justified in Asking for an Increase in Rates?

Commenting—in a letter which is published elsewhere in this issue—on an editorial which appeared in the April 7 number of the AMERICAN GAS ENGINEERING JOURNAL on the position of the American gas industry with the Nation at war, S. E. DeFrese, general manager of the Chattanooga company, touches upon the possibility of the thought arising that, in asking for rate increases, gas companies might be taking advantage of a prevailing situation. He is, however, loathe to believe that any municipality would fail to give the gas company justice in the matter.

This journal cannot altogether reflect the optimism of Mr. DeFrese in this regard. Left to the good sense and unbiased judgment of the general public the gas company could present its case and obtain relief without the slightest fear of unjust suspicion. But there are politicians and demagogues of a class the gas companies are unfortunately only too well acquainted with in this country while it is at war just as there were before the war. And squeezing the public utilities still provides in many sections excellent political capital.

The necessity of applying for increased rates in many cases is imperative. But gas companies in so doing must not expect that they will entirely escape adverse criticism.

To even suggest that the companies are taking advantage of present conditions would of course be utter nonsense.

In the editorial Mr. DeFrese alludes to we said that

the gas industry " faces a responsibility and an opportunity that is beyond the power of the imagination to picture. Increasing our output and finding a market for the increase becomes more than merely good business. It is a patriotic duty."

Increasing our output involves an increased use of expensive raw materials; of coal, particularly, that is costing as much as three hundred per cent more than it could be purchased for a year ago.

Finding a market for our increased output involves among other things extensions to mains. Cast-iron pipe of a size that cost twenty dollars a ton—which will lay less than fifty feet—a short time ago, to-day costs almost sixty dollars.

This is in line with the increased cost of all construction material. To make an extension that made two years hence would cost but a third of what it would cost to-day, to secure a consumer in the interim who would pay for his gas very little more than it cost the gas company to make it and send it to him; would be a ruinous business policy.

Conservative investors can afford to spend three times the amount that it would ordinarily cost to construct a munitions plant. The return would be such as to pay back the difference in a definite number of months. But the situation of the gas company is entirely different.

Yet obviously construction rather than marking time in the gas industry should in the best interest of the nation go on with redoubled vigor. If the total quantity of gas manufactured and used in the country to-day and the facilities for recovering the by-products necessary for Government purposes were double what they are the country would be in a vastly more favorable position, favorably though it is situated, to discharge the great task it has ahead of it.

In seeking better rates we can be confident that our reasons are sound. Criticism is possible, but it cannot be just.

Hitting the Nail on the Head in the Industrial Field

Papers presented at the various gas association conventions on the possibilities that lie in the industrial fuel gas field have, in the opinion of this journal, been very much a case of the same facts and suggestions stated over and over again. There has been a degree of monotony about them, viewed from a pivotal point such as the editorial offices of a National gas journal, which, of course, was not evident at the gatherings before which they were presented, for with our numerous associations a certain amount of repetition is inevitable. Because certain information, for instance, was conveyed at a California gathering, is not a reason for the papers committee at an Illinois gathering taking it for granted that the subject was already familiar to its constituency, and therefore debarring a similar paper a place on its program.

But R. A. Ziegler in his industrial fuel paper at the Indiana gathering strikes a new note. " If, at any time, you develop new ideas or have been able to secure business that heretofore you were unable to handle, communicate such information to appliance manufacturers and gas journals—they will be glad to have them included in their bulletins, and published in the trade journals for the benefit of the fraternity in general. The inter-changing of ideas and close co-operation with industrial appliance manufacturers will do more to increase the industrial business, that is so valuable for our future success, than any other one thing we can do."

There is little that need be added to Mr. Ziegler's statement. He has offered a suggestion that, if generally adopted, would hasten progress in the industrial field by at least 50 per cent.

The Selective Draft

No American who loves his country and thinks of its future interests as well as the present can fail to rejoice at the action of Congress in adopting the principle of selective draft for military service. It means, in short, a nation prepared to insure the lives and property of its citizens, an assurance that our children may grow up surrounded by the same opportunities we had and, in all probability in peace and secure from the possibility of having actually to fight to retain such advantages for their children. It means also better citizenship and a higher degree of patriotism.

It cannot be denied, however, that there exists in many an aversion to entering the Nation's military service under the name of conscript. We have not absorbed the selective principle sufficiently not to prefer to volunteer; to offer our bodies, and perhaps our lives, freely in the Nation's service.

Various misguided periodicals have spread broadcast the slogan " Enlist now, when you can enter the country's service with honor." The motive behind this is commendable. It aims to stimulate recruiting to fill the gaps in the regulars, the navy, the marines, and the national guard. The means adopted is an unhappy selection. The doctrine preached is mischievous and false.

The draft as it will be applied in this country does not imply a lack of patriotism, but a higher patriotism. It means the placing of ourselves at the disposal of the Government to a broader extent than the lives of Americans have ever been placed at its disposal in history. Without the sentiment of the country behind it, the bill that Congress has passed would have been an impossibility, and that sentiment could have been easily influenced one way or another by the very men who will come in under the draft, had they been so inclined.

Further the man who enters the military service of the country as a conscript will, we think, have better justification for personal vanity than those who got into it in the past as volunteers. Patriotism is not limited to the physically perfect. It is also a quality of the lame, the halt and the blind. With the limited field to select from that characterizes the volunteer method, examining officers sometimes overlook shortcomings.

The existing establishments which require volunteers to bring them up to war strength offer a very great attraction in themselves to the type of man who is eager to take the supreme risk in his country's service. They offer, without doubt, an opportunity for quick action. Drilling, as he will be, alongside experienced men, the training of the volunteer will progress much more rapidly than that of the drafted man. He will, therefore, be ready for the battle fronts much earlier. The limitation of the period of enlistment to the duration of the emergency removes the one drawback of the regular service to the citizen soldier.

This inducement alone should be the actuating motive of anyone volunteering rather than waiting to be drafted. In our zeal to stimulate volunteering we should not preach, should not do an injustice to the thousands who may give their lives to the country as conscripts.

Correspondence

Taking Counsel with Regulatory Bodies in Relation to Increased Cost of Materials

Sir:—Your editorial in the April 7 number on "The Place of the American Gas Industry with the Nation at War" is extremely timely, and shows a very careful study on the part of the writer on the conditions now confronting gas companies in the United States, and for that matter gas companies in all parts of the world.

The necessity for increasing the price of gas is evident not only to those who are classed as gas consumers, but to anyone under whose observation the matter may come. In my judgment the cause for this increase originates entirely from the increase gas companies have been forced to pay for all commodities entering into the manufacture, distribution and sale of gas. It does not originate from a desire on the part of gas companies to take advantage of any situation that now prevails, but is the result of a condition that is forced on all alike, incidentally causing gas companies to suffer, just as it has caused others to suffer.

It has been quite easy for manufacturers and merchants to arrange their business to meet this new condition of things, for the reason that goods manufactured and sold enjoy a difference in relation between what it costs to produce and the profit enjoyed by the sale of such production.

The laws of the land do not restrict manufacturers and merchants from placing a reasonable price on articles sold, neither does it deny them the right to enjoy a reasonable profit. With gas companies it is different. Gas companies operate under charters granted them by the state, and in addition to this many are under a municipal regulation by virtue of franchises; while others are under state control through regulations imposed by public service commissions.

Hence, with the conditions cited, gas companies cannot increase the price of gas without consent and permission of that arm of the law under whose jurisdiction they operate.

I believe that many managers have thought that owing to the nature of the franchise under which they operate that it is quite impossible to increase the price of gas over that which is named in such franchises. I believe this impression is wrong for all such franchises can be changed by mutual consent of both of the contracting parties, and I am loathe to believe that any municipality would fail to give to the gas company justice in such matters, or that it would suffer to see such an enterprise put out of business and at the same time tolerate an increase in price in every commodity which such a municipality may use.

I believe that the time has come, and in fact it has been here for the last year, when gas companies should immediately take into their counsel the governing bodies of the city or State which regulates them, with a view of extricating themselves from an extremely critical predicament. I believe that when such counsel is sought, it will be freely given, and that those in authority will recognize by the facts submitted to them, that the price of gas must immediately be raised, for the protection of the interests of all concerned.

I further believe that this is just as much a patriotic act as others we are called upon to show. It would certainly be very unpatriotic to put out of commission a business like gas companies without first making a necessary effort to show the people how new conditions have affected them. The most patriotic thing we can do to-day is to keep all lines of business moving in these troublesome times. It makes little difference whether we operate under normal or abnormal times, it is our duty to operate.

Yours very truly,
S. E. De Frese,
General Manager, Chattanooga Gas Company.
Chattanooga, Tenn.,
April 23, 1917.

Gas Situation in Paris Becomes More Acute

Proposal to Raise Rates to Industrial Consumers—Actual Loss to Companies in Manufacturing—No New Customers Being Accepted

By FRANCIS MILTOUN

Up to now there has been no raise in price of gas for domestic uses in Paris. It has stood at 20 centimes the cubic meters, though it is estimated that it costs 28 centimes to produce. The proposition now is to let the price for domestic consumption stand, but to raise it for industrial purposes, this to include all public and semi-public use in hotels, picture shows, cafés, restaurants, etc., etc., in all of which establishments, except possibly places of amusement, it still holds a place of perhaps half-and-half with respect to electricity.

This will be a big burden on the consumer, will make fuel costs for manufacturing purposes where it is used increase 30 per cent. and in many cases be a real hardship, for it is true that gas is still found in use in many places in the Paris area where no wiring for electricity has yet been placed.

No new installations of gas are being made, the companies are accepting no new subscribers, and a few laundries where it was proposed to install it, to supplement or take the place of coal, now unobtainable, have not been able to make contracts.

Adequate Supply System Necessary to Life of Business

The plants that are so unfortunate as to have too small mains and not enough holder pressure are surely sealing their own doom and it is incumbent upon every manager of such a plant to insist, as far as he dare, upon having an adequate supply system, declared F. L. Marshall, manager of the Gas Light Company of Augusta, Ga., in his paper at the Southern Gas Association Convention. We are selling a service and unless we give a reasonably satisfactory one, which most all plants are doing, there will not be the progress which is necessary for the life of any business.

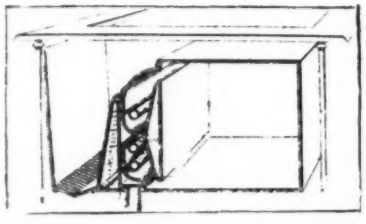
Those who already have their mains well loaded should guard against connecting any one large consuming appliance that would work a detriment to a number of neighboring customers, and should also guard against, in certain sections of the country, connecting a large number of appliances that would be used for only a few days in the year, causing either a high plant investment or for the few days, poor service to the customers at large.

Patents Pertinent to Gas Industry

Lighter for Acetylene Burners Operates Automatically

Patent No. 1,212,711; described in Patent Office *Gazette*, 1-16-17, page 874. Elmer E. Taggart, Syracuse, N. Y. Filed May 20, 1916. Serial No. 99,000. (Cl. 67-20. 1.)

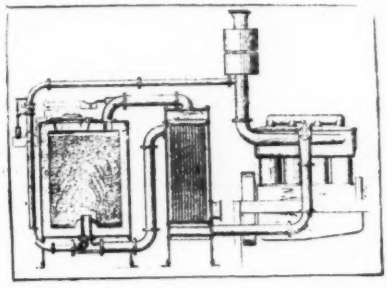
This device consists of a sleeve in which a rod, loosely supported at both ends, is mounted. A torsional spring co-acts between the sleeve and the rod, and an arm which is attached to the rod projects through a slot in the sleeve. Mounted on the upper end of the rod is a rotatable abraiding wheel, and attached to the sleeve is a carrier placed to present a body of sparking material to the circumference of the wheel. A clutch is provided so that by normally moving the arm attached to the rod the torsional spring becomes stretched, and when the rod is released, the spring causes the rod to revolve, thus causing the abraiding wheel to come into contact with the body of sparking material.



Means Adopted to Assure Combustion in Combination Range

Patent No. 1,212,434; described in Patent Office *Gazette*, 1-16-17, page 774. William Abigt and Edward B. Leonard, Evansville, Ind. Filed Jan. 12, 1916. Serial No. 71,712. (Cl. 126-36.)

This combination stove consists of a fire-box for solid fuel and an oven. Between the fire-box and the oven, and communicating with different sections of the oven are a series of chambers, in each of these chambers a gas pipe burner being installed. An air chamber provides the necessary secondary air, and automatic means are provided for opening communication between the air chamber and the burner chamber when a burner is turned on, and shutting off communication when the burner is turned off.



Producer Fired by Burned Gas from Gas Engine

Patent No. 1,212,894; described in Patent Office *Gazette*, 1-16-17, page 935. Charles S. Bradley, New York, N. Y. Filed Feb. 3, 1914. Serial No. 816,352. (Cl. 48-76.)

This apparatus consists of a gas producer and a gas engine. A method is provided for introducing fresh air into the producers and for the transfer of heat from the producer gas to fresh air, the cooled producer gas being delivered to the engine. The exhaust gas is reintroduced into the producer from the engine, and means are provided for controlling the proportion of burned gas and air which are supplied to the producer by the temperature of the producer gas.

Process of Separating Hydrocarbons from Gases

Patent No. 1,213,795; described in Patent Office *Gazette*, 1-23-17, page 1280. Willard Oliver Felt, Bradford, Pa., assignor to Petroleum Products Company. Filed Oct. 3, 1908. Serial No. 456,069. (Cl. 196-25.)

The process of separating condensable hydrocarbons from natural or any other gases containing them consists in compressing the gas in the presence of glycerine, then cooling the compressed gas, whereby the condensable hydrocarbons are liquefied.

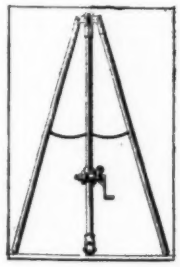
Swivel-Socket Provided for Gas Well Drills

Patent No. 1,212,962; described in Patent Office *Gazette*, 1-16-17, page 959. James H. Kuhns, Tulsa, Okla. Filed Sept. 16, 1915. Serial No. 51,020. (Cl. 255-26.)

Two sections are provided in this swivel socket for well drills, the upper section being threaded into the lower. The bore in the lower section is larger than that in the upper section, the cable extending through the upper section and into the lower section. A collar is arranged in the lower section which swivels against an extension of the upper section, the cable being babbitted within the collar. The section in which the swivel member operates is also provided with drains.

Portable Tripod Derrick for Street Work

Patent No. 1,214,104; described in Patent Office *Gazette*, 1-30-17, page 1417. Ernest C. Wingire, Minneapolis, Minn., assignor of one-half to Peter J. N. Miller, Miller, S. D. Filed June 21, 1915. Serial No. 35,447. (Cl. 254-145.)



This portable derrick for street main operations consists of a tripod with a sheave and lifting mechanism carried on one of the three posts.

Flames from Gas Burners Directed Inwardly in This Range

Patent No. 1,212,459; described in Patent Office *Gazette*, 1-16-17, page 782. Ransom W. Davenport, Detroit, Mich., assignor to Detroit Stove Works, Detroit, Mich., a Corporation of Michigan. Filed Oct. 11, 1915. Serial No. 55,262. (Cl. 126-36.)

In this stove, a gas burner extends horizontally along the rear wall above the bottom of the oven, and the flames from the burner are directed in an inward direction. A false bottom with a downward flange in front prevents the forward escape of the products of combustion, by directing such products to suitable ventilating flues.

Device Prevents Tampering with Meter Unions

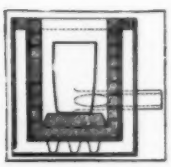
Patent No. 1,213,426; described in Patent Office *Gazette*, 1-23-17, page 1155. Miles A. Shadley, Kansas City, Mo.

Filed Feb. 27, 1915. Serial No. 11,083. (Cl. 137-28.)

This device consists of a transversely slotted cage which encircles the meter union, with flanges secured around the pipe above and below the union. A perforated tongue projects from one end of each flange and fits a slot in the other end of the flange, being passed through the slot when the cage is in an operative position. A wire is passed through the hole in each of the tongues and properly sealed to prevent tampering with the union.

Furnace Composed of Two Concentric Vessels

Patent No. 1,213,082; described in Patent Office *Gazette*, 1-16-17, page 1000. Fritz Doerinckel, Essen-on-the-Ruhr, Germany. Filed June 17, 1916. Serial No. 104,345. (Cl. 158-7.)



This furnace is composed of a casing having an aperture therein, with a pipe joining the aperture tangentially to the casing. A smaller vessel is placed coaxially in the casing, and is made of refractory material, also being provided with a number of fine radial apertures. A plate closes off the annular space, and is provided with gas-tight edges.

Gas Follows Special Path in Tar Extractor

Patent No. 1,212,193; described in Patent Office *Gazette*, 1-16-17, page 687. Henry L. Doherty, New York, N. Y. Original application filed April 13, 1911, Serial No. 620,861. Divided and this application filed April 4, 1912. Serial No. 688,538. (Cl. 261-79.)

In the operation of this apparatus the gas enters the separator through a pipe discharging into a header. It then flows through a spiral passage to the central portion of the apparatus, and back through an adjacent spiral passage to the gas outlet chamber and is discharged. During the passage of the gas through the spiral convolutions of the apparatus it contains a sufficient velocity to bring the action of centrifugal force into play, which throws the suspended tar and dust to the periphery of the gas stream and into contact with the walls of the spiral. As the deposit continues, the tar runs off in rivulets.

Gas Range Burner Provided with Branches

Patent No. 1,215,679; described in Patent Office *Gazette*, 1-16-17, page 457. Sebastiano Martoccio, New York, N. Y. Filed March 3, 1916. Serial No. 81,826. (Cl. 158-104.)

This burner is equipped with a number of rows of pipes attached to the mixing chamber. A row of pipes is provided with a series of branches and also attached to the mixing chamber.

Stove Pipes Prevented from Becoming Disjointed

Patent No. 1,217,805; described in Patent Office *Gazette*, 2-27-17, page 1296. John A. Meyers, Forestell, Mo. Filed April 12, 1916. Serial No. 90,625. (Cl. 126-308.)

The interlocking of telescopic stove pipe sections is accomplished by a pair of lugs, formed in the end of one section, locking into sockets on the end of the next section of piping.

Inventor Claims This Device Saves Gas

Patent No. 1,217,854; described in Patent Office *Gazette*, 2-27-17, page 1311. Frank G. Wright, San Diego, Cal. Filed Aug. 16, 1915. Serial No. 45,804. (Cl. 126-214.)

A band of heat insulating material is mounted upon the burner of the stove and under the grid. Slidable adjustments allow for expansion and combustion.

Gas Shut-Off Valve Restricts Flow of Gas

Patent No. 1,218,089; described in Patent Office *Gazette*, 3-6-17, page 70. Grover C. Kail, Jewett, Ohio. Filed June 7, 1915. Serial No. 32,714. (Cl. 67-116.)

This device is supposed to decrease the pressure of gas by partially closing an already restricted orifice in the pipe.

Distribution of Heating Gases Carefully Worked Out in This Coke Oven

Patent No. 1,212,866; described in Patent Office *Gazette*, 1-16-17, page 925. Louis Wilputte, New York, N. Y. Filed April 26, 1913. Serial No. 763,714. (Cl. 202-9.)

In this regenerative coke oven the heating flues are arranged in sets, each consisting of two groups with the flues in each group connected at one end to the corresponding ends of all the flues in the other group of the same set. The method of regulating the distribution of the heating gases among the heating flues consists in causing the air entering, and the off gases leaving, each group of heating flues to flow externally of the flues, in divided streams along flow paths such that the stream of air entering any one flue flows to the flue along a path, separate, not only from the paths followed by streams of air simultaneously entering other flues in the same group, but also separate from the path of flow followed by the off gases leaving the flue when the direction of flow therethrough is reversed. The distribution of flow in one direction through each group of flues is regulated by regulating the capacity of the separate paths traversed by this flow.

C.E-Z Type of Mantle

Patent No. 14,241; described in Patent Office *Gazette*, 1-2-17, page 344. Sverre Gulbrandsen, Woodbury, N. J., assignor to Welsbach Light Company, Gloucester City, N. J., a Corporation of New Jersey. Filed Dec. 1, 1916. Serial No. 134,537. Original No. 1,133,470, dated Mar. 30, 1915. Serial No. 836,671, filed May 6, 1914. (Cl. 67-98.)

This patent is issued to cover the limp inverted mantle of the type similar to those used in C.E-Z lamps.

Flue Pipe Enters Chimney at Angle

Patent No. 1,211,132; described in Patent Office *Gazette*, 1-2-17, page 258. Daniel B. Gallaway, Corydon, Ky. Filed May 9, 1914. Serial No. 837,548. (Cl. 126-314.)

The flue pipe enters the chimney at an angle, a special fitting being secured to the chimney in which the flue pipe from the appliance is fastened. This increases the draft by decreasing the resistance in right angled bends.

Device Provided for Automatically Dumping Small Cars

Patent No. 1,213,327; described in Patent Office *Gazette*, 1-23-17, page 1121. James H. Baker, Fairfield, Ill. Filed Aug. 25, 1916. Serial No. 116,881. (Cl. 214-1.)

The feature of this dumping car consists in a number of hinged bottom gates and levers arranged in such a way that a trip, fixed in the track automatically dumps the contents of the car, while an obstruction, also placed in the track, closes the covers after the load has been dumped.

News of the Gas Industry

Kansas Natural Wins Case Against Commission

The Kansas Natural Gas receivership won a sweeping victory in the Federal District Court of Kansas yesterday, when Judge Wilbur Booth, of St. Paul, handed down his decision in the injunction case against the Kansas Public Utilities Commission.

The utilities commission has held down rates for gas served by the Kansas Natural ever since its organization in 1911, when a 25-cent rate was in effect.' In December, 1915, the utilities commission allowed an increase to 28 cents. The receivers accepted this rate, and then last June went into the federal courts to have it overturned. The receiver made his fight on two main lines: First, that the 28-cent rate was too low; second, that the utilities commission had no jurisdiction over the matter, anyway. Judge Booth sustained both contentions unqualifiedly, and relieved the utilities commission of any further responsibility in the affairs of the Kansas Natural, unless the commission can persuade the Supreme Court to reverse Judge Booth.

Judge Booth ruled that the 28-cent rate, ordered a year ago last December by the utilities commission, was unremunerative, confiscatory and violative of the United States Constitution, among other things. He ruled further that the sale of natural gas by the Kansas Natural receiver was interstate commerce and not subject to regulation by the Kansas commission. The temporary injunction against the utilities commission, prohibiting it from interfering with rates established by the receiver, was made permanent.

Steady Gain in Baltimore Industrial Service

The estimated annual revenue from new industrial power and fuel business secured by the Consolidated Gas Electric Light and Power Company for March is $47,850. The estimated annual consumption from new contracts for industrial fuel is 16,389,800 cubic feet of gas.

Since the beginning of the current fiscal year, July 1, 1916, the gain in annual revenue from new industrial power and fuel contracts is $346,740.83.

Indiana Association Affiliates with American Gas Institute at Annual Convention

E. J. Burke Elected President for Ensuing Year—New Suggestions on Industrial Fuel—Water Heater Department for Gas Companies

Announcement was made at the annual convention of the Indiana Gas Association in Indianapolis April 24 and 25 that affiliation arrangements with the American Gas Institute had been completed. Two outstanding papers presented were those of W. J. Barrett on water heaters and of R. A. Zeigler on industrial fuel. In the discussion of the latter the value of a comparison of the proportion of spoiled goods using gas as against that with solid fuel as a selling argument was pointed out.

Heavy rain fell during night and day dawned bleak and cold, but when President Dalley called the meeting to order on the morning of April 24, the sun came out to greet the 80 faithful gathered in the Assembly Hall of the Claypool Hotel.

Reading of minutes and roll call were dispensed with and Secretary Dunbar read report of Executive Committee, routine in character; the important point being the announcement that the Indiana Association had affiliated with the American Gas Institute.

Secretary Dunbar followed above report with his, as secretary, and treasurer. Up to present meeting there are two honorary members, 104 active and 66 associate members, an increase of 25 over last year.

The President announced appointment of Messrs. Zeigler, Cash and Chubb as committee of calorimetry. The Secretary read a letter from a well known gas lamp manufacturer telling of the action of the State Inspection Bureau of its discrimination against gas lighting by increase of fire insurance rates. The President read his address, which contained much important matter with new thoughts regarding association work.

E. J. Burke, vice-president, presided during reading of address and at its conclusion appointed Messrs. Schall, Goodrich and Thwing, a committee to report thereon. The auditing committee reported all accounts balanced and in proper condition. Messrs. Roche, Maxon, Garsuch, were appointed on the nominating

Rate Increase at Westfield, Mass.

The Westfield Gas & Electric Commission advertises an increase in rate to $1.25 per 1,000 cu. ft., the minimum remaining same, as follows:

"This action was forced upon the department from the fact that to obtain any gas coal whatever, we were obliged to contract at such a figure that the coal cost will be about $17,000 more this year than last. In addition, all contracts are now affected by a change in miner's rates and we have already been notified of an increase over our contract price of 20 cents per ton at the mines, thus adding another $1,000 to the cost. There will undoubtedly be an increase in the freight rates and there is a possibility of still further demands on the part of the miners."

The Frankton, Ind., Plant Sold

Due to the exhaustion of gas at Frankton, Ind., the Urmston Gas Company has sold its plant recently, according to information received from LeRoy Urmston.

Seven Good Producers Drilled Recently

S. J. Gish of the Central Coal & Iron Company, Inc., Central City, Ky., informs us that during the past six months he has drilled seven gas wells in Logan County. Each one of these are producing wells ranging from 1,000,000 to 3,000,000 feet.

committee. Messrs. Mulholland, Chubb, Goodrich, were appointed on the committee on time and place of next meeting. For the membership committee, Mr. Zeigler, chairman, announced the reception of applications of 20 for active and 6 for associate membership and on motion they were elected and personally introduced to the convention by Mr. Zeigler.

Mr. Thwing reported for the badge committee, showing sketch of badge proposed, which on motion was adopted as the permanent badge of the Indiana Gas Association.

The program of papers was slightly changed; the paper by W. J. Barrett on "Water Heated by Gas" being read first. It was a good paper and was given an attentive hearing. The discussion followed, opened by F. A. Lemke, who said that reason for large number of tank heaters now in service was because that type was the first put on the market and was low in price. Big gas consumption could be secured he asserted. He urged the importance of securing the good will of plumbers. He thought a water heater department in gas companies a good idea and spoke of great value of having certain employees thoroughly versed in water heaters qualifying practically as experts.

Mr. Hallis thought the paper covered subject thoroughly and told of installing water heaters in large office buildings. Spoke of advantages of storage heaters for large dwellings.

At this point S. E. Mulholland escorted Governor Goodrich of Indiana to President Dolley, who extended a warm greeting. The Governor spoke of his being a gas man covering a period of years and could therefore sympathize with all gas men in their troubles securing coal, price of which is higher than ever before and recalled many of the disadvantages that gas companies labor under. He always believed in public regulation as being fairer to utility and customer. The Governor was given a rising vote of thanks upon his departure.

The discussion on water heaters was resumed by Mr. Knapp, who told of some quaint experience in selling and showed necessity for a salesman to be alive to the constantly extending uses to which gas can be put. Discussion closed by author. Adjournment was taken to roof of hotel where the group picture was taken and then luncheon.

At the opening of the afternoon session three applications for membership were presented and the gentlemen were promptly elected. R. A. Zeigler read his paper on "Industrial Gas Business." As this subject is uppermost in the minds of many in the industry just now it was well received. The author went into the history tracing its origin from gas lighting in a very interesting manner, and at the end showed pictures with descriptions of twelve successful installations. Discussion was begun by J. H. Maxon, who said selling industrial gas was a difficult proposition, that called for efficient salesmen who possessed patience and engineering ability who should seek advice from the company's staff and gradually work our problems to show economy and not to leave the job until the customer was completely satisfied—give service — money invested to promote sales turns over very quickly. Mr. Kaufman thought the paper excellent and replete with good ideas. The subject of rates is important, although not the important factor, but shows if possible the small proportion of spoiled goods using gas as against large proportion under solid fuel system. Mr. Cauley said he was especially interested in the Premix burner shown in use in the illustrations. Mr. Neal told of his experience and the author closed his discussion. "Gas vs Electricity" by C. N. Chubb, followed and proved to be a paper on a subject every gas man is up against—competition—and the suggestion advanced by the author should be thoroughly drilled into the gas man. In opening the discussion Mr. Patton spoke of his interest in the subject and that the gas man must sit up and take notice, that he had failed to take advantage of the possibility of plant efficiency as the electric man does and the present old fashioned methods must be replaced by modern methods.

Mr. Crawford told of methods of selling and advertising of the electrical cook range people and read extracts from a report of electric ranges showing that it did not compare favorably with gas ranges. Messrs. Lemke, Hay, Neal and Hallis also brought out interesting points and the subject was closed by the author.

Everybody had a good time at the banquet. About 140 were present and did justice to the excellent menu and were entertained by a splendid cabaret.

The first business attended to at the opening session April 25, Morning, was the report on President's address. The committee having the matter in charge asked the members to give special consideration to the recommendations and to take advantages offered by the American Gas Institute to affiliate state associations, i. e., participation in the annual meetings and to securing regular copies of the *Gas Institute News*, all of which can be had for additional payment of $2 per year.

J. B. Douglas gave his address on "Be Careful First" illustrated by American Gas Institute moving pictures, and was listened to by a well filled room during the 1¼ hours of its presentation. Frequent applause punctuated the series of excellent pictures. Some of the important points were charts showing percentage of classified accidents, age of those hurt, and the hours of the day the accidents occurred. At its conclusion Mr. Douglas received a rising vote of thanks.

C. B. Scott of the Middle West Utilities Company emphasized points in Mr. Douglas' lecture and told of his work for safety in the Middle West. Mr. Scott pointed out what he said was the greatest danger, i. e., the careless man, who in spite of the safeguards provided, neglected to make use of them and called attention to an important thing, the matter of compensation as the State Board denies any compensation to those hurt who have not used the safety devices they were instructed and taught to use. Safety to be effected must be made a part of everyone's daily routine and example must be set by the employer and superintendents and foremen under him.

The final paper of the meeting by W. H. Crawford on "Main Extension" was read by author in the afternoon. In opening the discussion J. H. Maxon spoke of main extensions as very important due to necessity of reaching out for new business. The municipalities in Indiana have the power to order extensions, subject of course to Public Service Commission. The subject matter in this paper should meet the approval of gas managers.

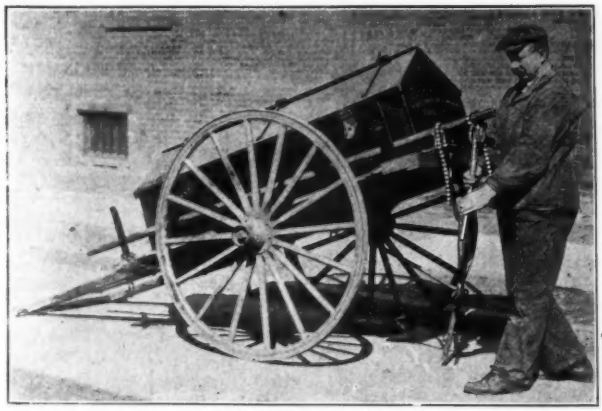
S. D. Forrest told of some difficulties that often were financial hardships due to the fact that in Indianapolis his company was required to lay 35,000 ft. of main each year on the order of department of public works and showed some inconsistencies in this requirement in rela-

(*Continued on page* 452)

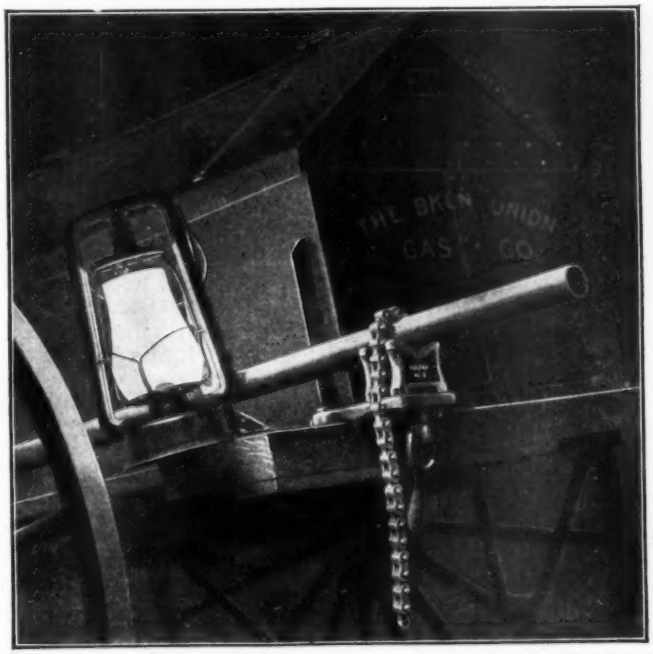
Chain Pipe Vise Which May Be Attached to Service Cart Handles Pipe Up to 6 Inch

A chain pipe vise capable of handling pipe as small as ⅛-in. and as large as 6-in., which may conveniently be attached to and carried on a service cart, has been put on the market by J. H. Williams & Company, of 68 Richards Street, Brooklyn, N. Y. The arrangements of the device and method of attachment are shown in the accompanying illustration. Such parts as thieves might with readiness remove can be taken off conveniently and locked up overnight in the cart.

Its manufacturers have only advertised its usefulness generally for pipe sizes from ⅛ to 4-in. pipe, but experience has taught the Brooklyn Union Gas Company that, provided with extra length chain, it can readily handle all gas pipe installations up to and including 6-in. w. i. pipe; and they have successfully put a 3-in. tap into a 12-in. plug held by it, without injury to the vise, though they tore their bench apart in the operation.



OPERATING THE CHAIN PIPE VISE ON ONE OF BROOKLYN COMPANY'S SERVICE CARTS



CLOSE VIEW SHOWING HOW ATTACHMENT OF "*VULCAN*" CHAIN PIPE VISE IS MADE

Cambridge Companies Ask Adequate Protection

The Cambridge (Mass.) Gas Light Company and Cambridge Electric Light Company, in a communication to the Council, requested that armed police guards for day and night duty outside their plants, be provided by the city. The communication, which was referred to the Committee on Public Safety, was as follows:

"The Cambridge Gas Light Company and the Cambridge Electric Light Company hereby respectfully petition your honorable body that sufficient force of armed police be detailed to patrol for the full 24 hours the streets adjacent to the public service works of the above named companies. This in view of the fact that while we now employ armed guards inside our premises, neither the federal nor state authorities will furnish any armed force for guarding these premises on the outside.

"We therefore request that this force be furnished and equipped and paid by the City of Cambridge."

New Corporation to Supply Maine Towns

A new corporation to file its articles of incorporation with the Attorney General of Maine is the Franklin Power Company, Inc., organized April 9 at Farmington to generate, distribute, sell and supply gas or electricity or both, for lighting, heating, manufacturing or mechanical purposes, in the towns of Anson, New Portland and Embden, Somerset County, and Farmington, Wilton, Strong, Phillips, New Vineyard, New Sharon, Chesterville, Weld, Madrid, Rangeley, Temple, Freeman, Salem and Kingfield, Franklin County, and for purposes aforesaid to purchase, own and develop water powers and to erect power plants and to acquire by purchase or lease water powers or plants already developed, etc. Capital stock, $300,000, all common, paid in, $300; par value, $100; shares subscribed, president, F. J. Savage, Fairfield; clerk, Alice S. Gilman, Oakland; treasurer, C. O. Sturtevant, Farmington; directors, the above.

Standing of Ohio Company

The Ohio Cities Gas Company stock, with the 25 per cent. per annum dividend, gives one of the largest returns among listed shares, about 18 per cent. There is still in prospect a substantial stock dividend. The price advanced several days ago several points, but there had been anticipation of the dividend reflected in the rise from about 120 to 140.

(*Continued from page* 450)

tion to laying in new streets where business was in the future. He gave some figures of costs. Messrs. White and Neal concluded the discussion and the author answered the questions raised. The committee on Nominations presented following for officers for coming year: President, E. J. Burke, Indianapolis; Vice-President, C. N. Chubb, South Bend; Secretary and Treasurer, J. W. Dunbar, New Albany. New directors: Messrs. Thwing, Patlon, Crawford, Shepard. Indianapolis was selected as the next place of meeting.

Resolution pledging to President Wilson and Governor Goodrich support of the gas men in Indiana was passed.

New Record in Utah Coal Encouraging to Gas Companies

The production of coal in Utah in 1916 was 3,567,428 net tons, valued at $5,795,944, an increase, compared with 1915, of about 459,000 tons, or 15 per cent., in quantity, and of $879,000, or 18 per cent., in value. The output in 1916, according to C. E. Lesher, of the United States Geological Survey, Department of the Interior, was the greatest on record for the state of Utah and exceeds that of 1913, the previous record year, by more than 312,500 tons. The increase was made largely in commercial shipments from the mines in Carbon County, all other counties recording decreases. The consumption of Utah coal by the railroads increased, and the market on the Pacific was extended, largely by reason of the decrease in water-borne fuel from Australia and Japan and from the Atlantic coast of the United States. The activity of the smelters and metal mines increased largely the output of both coal and coke.

For the first ten months of 1916, except for short periods of car shortage, the transportation facilities were ample. In November and December the car supply was reduced and production was somewhat curtailed. In the early part of the year the supply of labor was normal, but in the summer many men left the coal mines to work in the metal mines, where there is more working time and better wages, and many others were reported to have left to seek employment in munition factories and other industries in the East, in the hope of getting better pay. The number of employees decreased from 3,564 in 1915 to 3,129 in 1916, but the average number of days worked increased from 208 to 228 in 1916. The average value of the coal per ton increased from $1.58 in 1915 to $1.62 in 1916.

Ohio Commission Declares 10 Per Cent. a Fair Rate of Return

Listing of gas production and supply as a hazardous and uncertain undertaking by the Ohio State Public Utilities Commission in specific contrast to production and distribution of electricity, telephone and railway transportation as substantial and perpetual enterprises, has placed gas companies in a posiiton to yield more remunerative dividends.

For the natural gas business, the commission designated 10 per cent. net profit as a fair return on physical valuation, in fixing thirty-four cents as the rate for Ashtabula, Conneaut and Geneva. With the fair return for gas companies fixed at 10 per cent., it is expected the commission will consider a much lower rate as fair return on electric, telephone and railroad investments.

The physical valuation of utilities is made more important by the commission's ruling, as rates must be computed on such valuations. That the commission may consider 6 per cent. and at most not more than 8 per cent. as a fair return for them, is thought likely now by electric, telephone and railroad interests. In additon to the thirty-four cent rate the companies have the right to make a "readiness to serve" charge of 20 cents per month on every meter installed.

Inter-Department Debates Arouse Interest

An item telling of debates at monthly employees' meetings which certainly have a stimulating effect on "company spirit" may be of use to other companies. The report is contained in the following:

The monthly meeting of the employees of the Knoxville (Tenn.) Gas company for this month was one of unusual interest. The program consisted of a debate between the representatives of the various departments of the company on the questions, "Which Department of the Knoxville Gas Company is the Most Important?" A silver loving cup, given by T. W. Collier, of the Welsbach Lamp Company, was presented to the winner, the manufacturing department.

The judges of the contest were Messrs. Dan Fields, Wm. Tate, D. M. Chambliss and E. T. White. Forty-five employees and visitors were present. Refreshments were served and the entire meeting was abound with enthusiasm and intense interest.

How One Company is Helping to "Do Its Bit"

George H. Hill, Chief of Police at Worcester, Mass., has completed a plan for emergency medical, ambulance and hospital service, in the event of any large explosions or other accidents on a large scale, which might arise while the country is at war.

Dana D. Parnum, president of Worcester Gas Light Company, has agreed to undertake to furnishing of as many automobile trucks as would be needed for ambulances at such a time. Chief Hill has increased the police ambulance emergency outfit so that it is in a state which would be ample for almost any contingency, and has arranged with the hospitals in the city for proper service.

Dinner Given to Employee Who Served at Verdun

The Boston Consolidated Gas Company gave a dinner at the Parker House, Boston, recently for Lieutenant Richard C. Ware, a former employee, who has just returned from a year's service in the American ambulance field service. Lieutenant Ware was at one time connected with battery A, First Field Artillery, M. N. G. He gave an illustrated talk on his experiences with section 4 of the ambulance at Verdun.

Boiler Room to be Enlarged at New Britain Company's Plant

The contract has been awarded to the B. H. Hibbard Company for an addition to the boiler room for the New Britain Gas Light Company, New Haven, Conn. It will be of brick construction, 35x45 feet, one story high, with steel truss roof covered with corrugated iron. The sub-contracts have not been awarded.

Preparations Started for West Virginia Natural Gas Association Convention

Edwin Robinson, secretary of the West Virginia Natural Gas Association has been in Parkersburg, W. Va. recently making necessary arrangements for the annual convention of the association to be held in Parkersburg, July 11 and 12.

The convention will be held at Shattuck Park and local committees will be named soon to look after arrangements for the entertainment of the delegates.

About 1,000 delegates are expected this year, the association having grown considerably since the last convention, held at Charleston, in 1916, when the registered attendance was 800.

Mr. Robinson is arranging for the exhibits, which will be bigger and better than ever this year. They will be located in Floral Hall.

Indiana Company Granted Bond Issue

The Indiana Public Service Commission has granted authority to the Northern Indiana Gas & Electric Company to issue $609,000 face value of its first refunding mortgage 5 per cent. bonds, to be sold at 92 per cent. of their face value; $151,000 face value of Indiana Lighting Company 4 per cent. bonds at 80 per cent. of their face value, and $93,000 of 6 per cent. notes at face value.

The petition for such action was filed by the company, which now is operated by C. H. Geist, some days ago and a hearing recently was held.

El Paso Company Lets Contracts for $100,000

The contract for the building of a gasometer and pumping station to be constructed on corner Durazno and Luna Streets, block 37, East El Paso, Tex., has been let by the El Paso Gas Company to the Stacy Brothers Gas Construction Company, of Cincinnati, Ohio.

The gasometer will have a capacity of 1,000,000 cu. ft. of gas. The gas generator and pressure station to be installed will bring the cost of improvements to $100,000. In addition new mains will have to be laid and the old mains extended to accommodate the increased business.

New Jersey State Gas Association Meets at Newark

Election of Officers, Good Attendance, and Several Excellent Papers Make Meeting an Interesting One

The New Jersey State Gas Association held its fifth annual convention at the Robert Treat Hotel, Newark, N. J., April 26-27, 1917. O. F. Potter, of the Public Service Gas Company, elected as president for coming year. Paper on "War, Its Effect on the Present Price of Gas," proves timely and educational. Members visit many of Jersey's important industrial installations.

Ground Broken for Gas at Canton, Mass.

With special exercises, ground was broken on the Sharon, Stoughton, Canton town lines April 25, in preparation for the introduction of gas into Canton. The affair also marks the 120th birthday of the town.

About a year ago the Board of Trade advocated town gas, and several months ago at a mass meeting it was voted to grant a franchise to a Brockton company to install gas mains. Selectmen Joseph A. Murphy, Thomas D. Mullin and Ernest Guild recently broke the ground on the boundary line of the three towns.

The exercises were attended by all the members of the board of trade, the town officials and residents of the three towns. J. B. Anderson was in charge.

Mr. Anderson in the opening address outlined the growth of Canton and declared the event to be a fitting one in commemoration of the town's 120th anniversary.

Steam Heating System Changes Hands

The steam heating system, plant, mains and franchise and its privileges owned and operated by the Davenport Gas & Electric Company have been transferred to the Peoples Light Company, according to warranty deeds filed with the county recorder by Lane & Waterman, attorneys.

The franchise was granted the Davenport Gas & Electric Company by the city council on Aug. 2, 1916, for a period of twenty-five years.

The deeds were dated April 18 and convey all the rights and privileges of the system for the supplying of steam heating for domestic use in the city.

An address of welcome was given at 1:30 p. m. Thursday afternoon by Hon. Thomas L. Raymond, Mayor of Newark. After the reading of the minutes of the last meeting and election and introduction of new members, the reports from the regular committees were received.

James T. Lynn of Detroit, Mich., president of the National Commercial Gas Association, together with W. W. Barnes, 3d vice-president, Louis Stotz, secretary and treasurer, and C. W. Wardell, attended the opening session held on Thursday afternoon.

The election of officers brought the following results:

President, O. F. Potter, Newark, N. J.; Vice-President, J. M. Brock, New York, N. Y.; Secretary and Treasurer, J. B. Jones, Bridgeton, N. J.

The directors for two years are B. Kay Johnson, Newark; Walter Owen, Millville, N. J.; R. H. Garrison, Atlantic Highlands, N. J. Director for one year, Duncan A. Worrell, Philadelphia, Pa.

Affiliation representative, American Gas Institute, S. J. Franklin, Millville, N. J.

A paper on "Merchandising" was presented by W. M. Halsey of Newark, N. J., which proved interesting.

The dinner at the Robert Treat Hotel in the evening was particularly successful, some of the speakers being C. A. Ambler of the Brooklyn Union Gas Company, W. W. Barnes, representing the National Commercial Gas Association, John M. Brock, the newly-elected vice-president, H. H. Newman, C. Edwin Bartlett, and S. J. Franklin, the retiring president of the association.

On Friday morning a paper was presented by Charles W. Hoy, Glassboro, N. J., entitled "War, Its Effects on the Present Price of Gas." This paper was very favorably received, and considerably discussed.

"The Relative Costs of Publicity

to the Results Obtained" was another good paper, presented by Louis S. Treen, of Philadelphia, Pa.

Friday afternoon the members of the association left the Robert Treat Hotel on an automobile tour. They visited the plant of the Positive Lock Washer Company, where several gas industrial appliances are in use, and then went to Grandma's Bakery, 713 South 14th Street, Newark, N. J. This bakery has a very excellent installation of Crandall Pettee gas revolving ovens.

A tour made through Maplewood and the Orange Mountain Reservation, with a stop at Caldwell Center, the birth-place of the late President Grover Cleveland, proved very interesting.

The next stop was at the Montclair office of the Public Service Gas Company, then the Orange office of the Public Service Gas Company, then the Public Service Gas Company's gas plant, Market Street Works, back to the Robert Treat Hotel.

Kearney, Neb., Plant Sold

A deal was closed recently whereby the L. E. Myer Company of Chicago took over the Kearney Water & Electric Power Company plant with all its holdings. This embraces the electric power plant, the gas works, the Kearney canal and extension lines which have already been erected and in process of construction. The deal involved $250,000. The Myer company is the same firm which constructed the Boelus dam and power plant and controls many other public utilities. C. E. Collins, vice-president of the Chicago corporation, stated that from $500,000 up would be spent on additions to the present plant here, including widening of the canal and creation of more power for extension lines.

Coke Price Increased at Grand Rapids, Mich.

Gas coke has been increased to $7.75 net per ton for furnace, stove or nut sizes in lots of one ton or more, delivered within the limits of Grand Rapids. This price, which is subject to change without notice, according to the announcement of the Grand Rapids Gas Light Company, is $1.50 higher than the present price and $2 higher than the summer price last May.

A change of 50 cents a ton and 30 cents a half ton will be made for carrying and orders will be accepted only for immediate delivery and for such quantity as consumers will be able to put into their fuel bins.

The company explains that the situation is not how cheaply it can get coal, but if it can get it at all, that three times normal prices are being paid to coal producers and it is unable to make contracts and prices announced only partially compensate the company for the increased cost of coal for coke making, besides increased cost of materials and labor.

The company maintained its low prices for coke during the winter.

Spring prices for hard coal probably will be higher than last year.

Boise, Idaho, Company to be Controlled by Former Owners

The Boise Gas Light & Coke Company of Boise, Idaho, has practically reverted back to its former owners, comprised largely of Boise and Spokane men. The annual meeting of the stockholders of the company held recently, resulted in the election of directors as follows: Charles Theis, Spokane; Joseph H. Brewer, Grand Rapids, Mich.; C. E. Gray, manager of the company; William Stoehr and Richard H. Johnson, of Boise.

At the directors' meeting following Charles Theis was elected president; Joseph H. Brewer, vice-president; William Stoehr, secretary and treasurer and C. E. Gray, general manager.

There is to be no change in the policy or management of the company, the change in the directors simply showing that the former owners have again taken control of the company.

Gas Men Gathering at Roanoke

As this paper goes to press the gas men of Dixie are speeding on their way, on trains and automobiles, through the green-carpeted valleys of old Virginia, to Roanoke for their ninth annual meeting.

Already the vanguard is there, and from careful reports of the "arrived" it is to be a big meeting, very likely the largest the Southern Gas Association has known.

Conditions are changing so rapidly that it is difficult to say when these good fellows will get together again, and the interest in this 1917 meeting is intense.

The feature of May 1 was the regular annual meeting of the Executive Committee. Many matters of importance were brought before this committee, including a list of 50 applications for membership, among whom are: George B. Cortelyou, Jr., Manager Gulf Cities Gas Company, Gulfport, Miss.; Major Bret W. Eddy, General Manager, Lake Charles Gas Company, Lake Charles, La.; Edwin C. Hathaway, General Manager, City Gas Company, Norfolk, Va.; L. W. Jackson, Local Manager, Alabama Power Company, Anniston, Ala.; Alan E. Lockwood, Manager, Bluefield Gas & Power Company, Bluefield, W. Va.; F. W. Latham, Superintendent, Alexandria City Gas Works, Alexandria, Va.; Joseph Alfred Landry, President, Lake Charles Gas Co., Lake Charles, La.; F. R. Maxwell, Jr., Gas Supt. & Commercial Manager, Tuscaloosa Railway & Utilities Company., Tuscaloosa, Ala.; James McCabe, Manager, Southern Public Utilities Company, Greenville, South Carolina; A. R. Moffitt, Manager, Fayetteville Light & Power Company, Fayetteville, North Carolina; William H. Matlack, Commercial Dept., Augusta Gas Light Co., Augusta, Ga.; John McGuinness, Manager, Suffolk Gas-Electric Company, Suffolk, Va.; F. D. Murphy, General Manager, Houston Gas & Fuel Company, Houston, Tex.; J. S. Palmer, Manager, Concord Gas Company, Concord, N. C.; G. W. Rhodes, Supt., Henrico County Gas Company, Richmond, Va.; Lewis B. Rhodes, Jr., Asst. Supt., Henrico County Gas Company, Richmond, Va.; G. H. Roper, Supt., Americus Public Service Company, Americus, Ga.; Edw. W. Steinmueller, Sales Engineer, Western Gas Construction Company, 25 Broad Street, New York, N. Y.; A. F. Timberlake, Sales Manager, Consumers Gas & Coke Company, Waycross, Georgia; R. B. Wagner, General Manager, Appleby-Wagner Company, Saginaw, Mich.; Harry D. Wilson, Manager, Consumers Gas & Coke Company, Waycross, Ga.; Edmund S. Dickey, Manager, Maryland Meter Works, Baltimore, Md.

Toronto Has 53 Employees Who Pass N. C. G. A. Examinations

Fifty-three of the examination papers of the employees of the Consumers Gas Company (Toronto) have been passed on by the examiners of the National Commercial Gas Association. Every one received passing marks and all papers are to be highly commended.

Michigan Gas Association Cancels Annual Convention

Present National Crisis Causes Indefinite Postponement of Meeting

The Executive Committee of the Michigan Gas Association, after a somewhat lengthy consideration, has decided to cancel the annual meeting of the Michigan Gas Association, which was to be held at Grand Rapids, Mich., Sept. 6-7, 1917.

This is considered the best course of action by the Executive Committee, according to Clark R. Graves, secretary and treasurer, because of the unsettled condition of the country and because of the part which this Nation is to take in the present world war.

Detroit Company Seeks Heat Standard — May Build $4,500,000 Plant

A change in the standard of gas for Detroit will be asked by the Detroit City Gas Company, which declares that the present standard forces the company to use uneconomical methods and will force a rise in the price of gas to the consumer unless it is modified to permit the use of the by-product coke oven process.

Victor F. Dewey, vice-president and general manager of the gas company, has conferred with Mayor Marx, of Detroit, Mich., who informed him that the matter must go before the council. The exact form of the ordinance to be asked is now being considered. Mayor Marx says that as soon as the matter is brought before the council he will appoint a board of experts to examine the proposal and see if the standards asked by the company are fair and will produce the economies stated.

At present the gas company is rated by a double standard, illuminating and heating. The former is almost obsolete, as little gas is used for illuminating in Detroit. The heating standard set by ordinance is 600 British thermal units to the cubic foot, and it is on this figure, which the company wants reduced to 570, that the company will make its fight.

"To comply with the present heating standard, the company is forced to make carburetted water gas," said Mr. Dewey.

"We are faced now with the necessity of spending $4,500,000 on a new plant in an entirely new location, Mr. Dewey continued, because the city has grown so that all our plants are working to capacity. We want this plant laid out on the most modern lines, so we can make Detroit independent of oil prices in its gas. If we are forced to extend our plant for the making of water gas, it seems impossible to avoid raising the price of gas, a thing we are eager to avoid.

"If we can obtain the 570 standard we can not only produce a better gas for domestic and industrial purposes, but avoid a rise in price and possibly even achieve a further cut."

Newton Company Presents Bids for Public Lighting

The Newton & Watertown Gas Company has offered to furnish and light 1,070 street gas lamps in the city of Newton, Mass., on a five-year contract, for $16,050 per annum, on the present lighting schedule. Bids were received from the same company for lighting the lamps from a half hour after sunset to a half hour before sunrise, the total price per year being $19,527.50.

The company's return for 1915 shows the price received per thousand feet as $1.48, and the expense of lighting and care .605 cents per 1,000 feet.

Gas Used in Baking at Boston

A recent acquisition by the Boston Consolidated Gas Company, through its industrial fuel department, is a large bakery on Cambridge Street, in which gas has been substituted for coal in the bake ovens.

Taxes Grow Heavier in Wisconsin

The taxes to be paid this year by light, heat and traction companies throughout the State of Wisconsin have increased in almost every instance, according to figures given out by the Wisconsin tax levy. These figures show that although in many cases the valuation is the same or lower, the taxes have increased. The tax rate, which is the average paid on all taxed property in the State, is $13.49 per $1,000 of valuation this year as against $13.17 last year.

Among the companies whose taxes have increased is the Wisconsin Gas & Electric Company of Racine. The assessment on its property is $3,800,000 and the taxes $52,610.52, an increase of $12,751.32.

The valuation of the Milwaukee Light, Heat & Traction Company, which operates in Racine, was fixed at $8,750,000, the same as last year, but the taxes were fixed at $121,142.65, an increase of $5,882.32 over those of last year.

The Milwaukee Electric Railway & Light Company will have to pay $425,729.88 this year as against $395,178.00 last year, an increase of $30,551.62.

The Chicago, North Shore & Milwaukee Electric Railway Company, which passes through Racine, is assessed at $200,000 and its taxes are $2,768.97.

The total assessment of the property of all street car companies and light, heat and power properties operated in connection with them, is fixed for this year at $68,456,000, an increase of $122,000.20 over last year.

Ditch Diggers' Strikes More Frequent

Alleging that the wages paid them, $2 per day of eight hours, is not enough on which to live, twenty-five laborers employed by the Pacific Gas & Electric Company in Fresno, Cal., walked out recently. They constituted 90 per cent. of the company's ditch-digging gang. They demand $2.50 for eight hours' work. The places were immediately filled by other laborers, according to a statement given out by the gas company.

L. Keller, president of the Fresno Labor Council, has come to the assistance of the striking laborers. He stated last night that he intended to organize them. They are eligible for the mixed local which is now a member of the council.

Ohio Cities to Recommend Stock Increase

Directors of the Ohio Cities Gas Company recommended recently to the stockholders that capital stock of the company be increased from $10,000,000 to $100,000,000, which action indicates that a substantial stock dividend will be declared at the June meeting. A quarterly dividend of 6¼ per cent. was declared on the common stock, payable June 1, to stockholders of record May 17, this being an increase of from 10 to 25 per cent. per annum. Appraisals of the property by experts were not given out, but they are said to be much in excess of forecasts by directors. The directors were much pleased over reports submitted at the meeting.

Personal Notes

C. C. BOARDMAN, superintendent of distribution of the Western United Gas & Electric Company, Aurora, Ill., has resigned to accept the position of distribution engineer with the C. H. Geist Company.

HOWARD W. GREEN, former cost engineer for the H. Koppers Company at Lorain, Ohio, has entered the Government service in the Canal Zone as water chemist at the Miraflores water-purification plant.

W. J. ROSE, general manager of the Alliance (Ohio) Gas & Power Company since 1908, has resigned and will go into business for himself.

H. E. FRASER, formerly with the Wisconsin Public Service Company of Green Bay, has accepted a position with the Sheboygan (Wis.) Gas Light Company, and will have charge of the distribution work and leaks. The position is newly created and is an additional feature of the company in giving service to its consumers.

ROBERT G. MCPHERSON, formerly clerk at the Hotel Muskegon, has been appointed manager of the Muskegon Heights Gas Company at Muskegon, Mich.

Construction Notes

Panama Plants Near Completion

The gas plants of the Colon Gas Company and the Panama Gas Company, both under one general management, are expected to be in operation by the middle of this month, provided there are no delays in receiving the remaining shipments of equipment from the United States. In each of the cities of Colon and Panama two concrete buildings, one 45 by 53 and the other 28 by 32 feet, have been erected. The gas holders in each city have a capacity of 50,000 cu. ft., which it is supposed will be sufficient for a beginning, the purpose being to add other gas holders as the business may render necessary.

The gas is to be produced from crude oil by the process that has proved so successful and popular in the cities of the Pacific coast. In Colon about 35,000 feet of mains from 4 to 10 inches in diameter have been laid. In the large office rooms of the Colon Gas Company stoves, water heaters, lamps, etc., are on exhibition to show the people the various ways of using gas. It is said that the gas to be supplied is very clean and that it will be considerably cheaper than the electricity now furnished.

The gas plants in Colon and Panama are owned and controlled by a firm of American investment bankers. The pipe for the mains, the gas holders, and the gas-generating machinery were supplied by American companies. The gas-generating machinery will be installed under the supervision of the American who invented this type of machinery for generating gas from crude oil.

16 Mile Main Completed in Mississippi

The Gulf States Gas Company, Biloxi, Miss., has completed the laying of a four-inch gas main from Biloxi to Gulfport and to the Mississippi Centennial Exposition grounds for a distance of 16 miles. The pipe line cost the company $65,000.

Contract Set for Norwood Plant Addition

Walter Smith & Sons, Broadway, Norwood, Mass., have been awarded the contract for the addition to the gas plant on Pleasant Street, owned by the Marlboro-Hudson Gas Company, 11 Amsden Building, Framingham. Brick, one story 25x26, cost about $5,000. F. B. Sanders, the owners' engineer, is the engineer.

Figures Ready for New Bellefontaine Plant

W. C. McCracken, of Columbus, expert gas engineer, is to present to the Council at the next meeting the approximate cost of constructing a gas plant in Bellefontaine, Ohio. He has prepared preliminary specifications for two plants, one coal gas and other water gas. He estimates it will cost $61,000 for one system and $80,000 for the other. Council has authorized $45,000 for a new plant. If Council authorizes an increased bond issue the work will proceed at once and advertisements for bids will be published.

Utilities Concerns Merged at Manhattan, Kan.

The Manhattan Ice, Light & Power Company and the Manhattan Gas Company have consolidated into the Manhattan Gas & Electric Company with slight changes in stock ownership. The latter company is a $500,000 corporation with an authorized issue of $220,000 preferred stock and $300,000 common stock.

South Carolina Plant to be Opened Soon

The new gas plant of the Southern Public Utilities Company, which is located near Monaghan mill, Greenville, S. C., will be opened for service very shortly, according to an announcement yesterday by F. M. Coward, who is in charge of the new plant.

When the plant is put into operation the present plant on Broad Street will be discontinued and will be used only in case of an emergency.

Unlike the present, water gas is not to be made, only coal gas being manufactured at the new quarters. The new plant will have a capacity of 170,000 cubic feet of gas each day, which is considered enough to allow for the growth of the city for some time to come.

Work began some months ago by the Gallivan Construction Company of Greenville, and it was hoped to have the plant ready for operation by the first of the year, but there was considerable delay in securing some of the machinery.

Battery of Coke Ovens for Manchuria

The American Coal & By-Products Coke Company, Chicago, Ill., has closed a contract for a battery of by-product coke ovens of the Roberts type to be installed in Manchuria in connection with a blast furnace, to be built for the South Manchuria Railway Company. The plant will be near an iron mine in the An Shan Chan district and is to have an output of at least 150,000 tons per annum. The South Manchuria Railway Company owns the Fushun coal mines, which will supply the ovens. The contract was signed on behalf of the railroad company by Yeyiro Ono, vice-president, Industrial Bank of Japan, Tokio, and L. Nakaya, chief engineer, South Manchuria Railway Company.